

**TRAFFIC ANALYSIS FOR THE  
HARBOR GATEWAY CENTER MASTER PLAN  
MULTI-USE COMMUNITY**

**Prepared for:**

**MCDONNELL DOUGLAS REALTY COMPANY**

**Prepared by:**

**Crain & Associates  
2007 Sawtelle Boulevard, Suite 4  
Los Angeles, California 90025  
(310) 473-6508**

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## EXECUTIVE SUMMARY

The project under consideration is the development of a 450,000 square foot shopping center and a 2,517,700 square foot industrial/office park. The shopping center could contain up to 4,000 theater seats and 30,000 square feet of restaurant uses. The project site is currently occupied by a 2,419,000 square foot distribution/warehouse facility used by McDonnell Douglas Aircraft Company. Previously, the site buildings had been used for aircraft manufacturing and assembly, with a total of approximately 5,500 persons working at the site. Following project completion, the site trip generation would be approximately 32,800 daily trips with 2,738 trips occurring during the morning peak hour and 3,057 trips occurring during the afternoon peak hour. The current site uses generate 8,560 daily trips, 845 morning peak hour trips and 1,105 evening peak hour trips.

The 170.2-acre project site is located within the Harbor Gateway section of Los Angeles. The site is bounded by 190th Street on the north, the Southern Pacific Railroad tracks paralleling Normandie Avenue on the east, industrial and residential uses on the south, and Western Avenue and industrial/vacant properties on the west. Access to the shopping center would be provided via driveways along 190th Street, up to two project driveways from Normandie Avenue which cross the railroad tracks and an internal roadway which will extend along the western edge of the site. Access to the industrial/office park would be provided by the internal roadway network, which will extend across the site and intersect with 190th Street, Normandie Avenue and Western Avenue.

This traffic study analyzes existing and future morning and afternoon peak hour traffic conditions within the area that is expected to be directly impacted by the proposed development. This traffic study also identifies the potential cumulative

traffic volume created by future related projects within the study area. Trips resulting from these related projects, as well as from the general, region-wide growth projected by SCAG, and the land-use intensifications within the City of Los Angeles projected by the City, were taken into account in the projection of future traffic conditions for Year 2006 for both with and without project scenarios.

Of the forty-one intersections analyzed in this study, thirty-two of the study intersections could be significantly impacted by traffic generated by the proposed project in one or both of the morning and evening traffic hours, prior to mitigation.

In order to minimize the traffic impacts of the project, a series of traffic reduction measures and roadway improvement measures was developed. All measures are considered feasible in that each is achievable within either existing public rights-of-way or the project site. The following measures are recommended to mitigate the project's significant traffic impacts to the degree feasible:

- o Compliance with Ordinance No. 168,700 (Transportation Demand Management and Trip Reduction Measures). This ordinance focuses on incorporating TDM facilities into the design of new buildings to promote alternative modes of transportation (see Appendix B). It should be followed in the design and construction of the project site and buildings.
- o Compliance with SCAQMD Rule 2202. The South Coast Air Quality Management District (SCAQMD) has adopted a rule designed to reduce the air pollution impacts of commute trips. This rule, unlike the rules it replaces, does not mandate trip reduction programs but allows individual employers to select from a variety of options. However, most employers have continued to select ridesharing programs as the most cost-effective method

of reducing air quality impacts. If site employers implement these trip reduction measures, 15 percent or more of the peak hour traffic generation from the industrial/office park component of the project could be eliminated.

- o Bus Transit Improvements. This project should work with the appropriate transit districts (i.e., Gardena Transit, Torrance Transit and MTA) to improve transit service to the site. Further, the sidewalks through the sites should be designed to provide attractive pedestrian routes to and from transit stops.
- o 1. Hawthorne Boulevard and 190th Street -- Restripe 190th Street and restrict parking to convert the existing eastbound and westbound right-turn-only lanes to through/right optional lanes. Modify the signal to remove the existing westbound right-turn phase.
- o 3. Crenshaw Boulevard and I-405 Freeway Southbound On/Off Ramps -- Widen and restripe Crenshaw Boulevard and modify the signal to provide northbound dual left-turn lanes.
- o 4. Crenshaw Boulevard and 190th Street -- Remove median islands, restripe and restrict parking along 190th Street to convert the existing eastbound and westbound right-turn-only lanes to through/right optional lanes.
- o 5. Crenshaw Boulevard and Del Amo Boulevard -- Restripe Del Amo Boulevard and modify the traffic signal to provide two left-turn-only lanes, a through/left optional lane and a right-turn-only lane in the westbound direction.

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- o 5. Crenshaw Boulevard and Del Amo Boulevard -- Restripe Del Amo Boulevard and modify the traffic signal to provide two left-turn-only lanes, a through/left optional lane and a right-turn-only lane in the westbound direction.

- o 7. Western Avenue and Artesia Boulevard -- Restripe Western Avenue and restrict parking to convert the existing northbound and southbound right-turn-only lanes to through/right optional lanes.
- o 9. Western Avenue and I-405 Freeway Northbound On/Off-Ramps -- Widen and/or modify the median island and restripe the westbound approach to the intersection (i.e., the off-ramp) to provide two left-turn-only lanes and a right-turn-only lane instead of the existing two-lane configuration.
- o 10. I-405 Freeway Southbound On/Off-Ramps and 190th Street -- Flare the west leg of the intersection, restripe 190th Street, restrict parking and modify the signal to provide dual left-turn lanes in the eastbound direction.
- o 11. Western Avenue and 190th Street -- Flare along the east curb of the south leg of the intersection and restripe to provide a northbound right-turn-only lane. Additionally, fund the installation of the City's Automated Traffic Surveillance and Control (ATSAC) signal timing system at this location. The ATSAC system provides real-time traffic flow monitoring and signal timing modifications, to maximize intersection capacity.
- o 14. Western Avenue and Del Amo Boulevard -- Restripe the eastbound approach to convert the through lane to through/left optional lane and provide east-west opposed phasing.
- o 15. Western Avenue and Torrance Boulevard -- Modify the median island and restripe the roadway along Torrance Boulevard, and modify the signal equipment to provide dual eastbound left-turn lanes. Restrict parking and restripe the roadway to provide a northbound right-turn-only lane.

- o 16. Western Avenue and Carson Street -- Restrict parking and potential flare the east leg of Carson Street to provide right-turn-only lanes in the westbound and eastbound directions.
- o 17. Western Avenue and Sepulveda Boulevard -- Restrict parking and modify the median islands along Western Avenue to provide right-turn-only lanes in the northbound and southbound directions.
- o 18. Western Avenue and Pacific Coast Highway -- Restrict parking and flare Western Avenue to provide right-turn-only lanes in the southbound direction.
- o 19. Project Roadway and 190th Street -- Restrict parking and restripe 190th Street to provide three travel lanes plus left-turn channelization in the westbound and eastbound directions. Construct the internal project roadway to provide a three-lane northbound approach including a left-turn-only lane, a through/left optional lane and a right-turn-only lane. Construct the signal to provide opposed north/south phasing (assuming a driveway along the north curb is a fourth intersection leg). Fund the installation of ATSAC at this intersection.
- o 20. Normandie Avenue and Artesia Boulevard -- Provide dual left-turn lanes in the southbound direction by restriping Normandie Avenue and modifying the signal.
- o 22. Normandie Avenue and I-405 Freeway Northbound On/Off-Ramps -- Widen and/or modify the median island on the westbound approach (off-ramp) to provide two left-turn-only lanes and one right-turn-only lane instead of the existing two-lane approach. Additionally, restripe the

northbound approach to provide two through lanes and an exclusive right-turn-only lane to facilitate freeway access.

- o 23. I-405 Freeway Southbound Off-Ramp/Project Driveway and 190th Street  
-- Flare and restripe 190th Street to provide three travel lanes in the eastbound and westbound directions, left-turn channelization and an eastbound right-turn-only pocket. Construct the project driveway to provide dual left-turn lanes and a right-turn-only lane in the northbound direction. Install a signal with opposed northbound and southbound phasing. Fund ATSAC installation at this location.
- o 24. Normandie Avenue and 190th Street -- Modify the signal and railroad crossing equipment on 190th Street to provide dual left-turn-only lanes plus three travel lanes in the eastbound and westbound directions. Modify the signal equipment to provide a southbound right-turn overlap phase. Restripe Normandie Avenue to provide a third northbound travel lane. Additionally, fund the installation of ATSAC at this location.
- o 25. Normandie Avenue and Project Roadway/Francisco Street -- Construct the project roadway to provide a three-lane eastbound approach including a left-turn-only lane, a through/left optional lane and a right-turn-only lane. Modify the signal to provide opposed phasing the eastbound and westbound directions.
- o 26. Normandie Avenue and Torrance Boulevard -- Restrict parking, flare and restripe Normandie Avenue to provide a third northbound through lane. Restrict parking and restripe Torrance Boulevard to provide a westbound right-turn-only lane.



- o 27. Normandie Avenue and Carson Street -- Fund the installation of ATSAC at this intersection.
- o 30. Vermont Avenue and Artesia Boulevard -- Flare and restripe Vermont Avenue and modify the signal equipment to provide dual left-turn lanes in the northbound direction. Providing a northbound right-turn phase overlapping the existing westbound left-turn phase as part of the signal modifications.
- o 31. Vermont Avenue and 190th Street -- Restripe 190th Street and modify the median island and signal equipment to provide dual left-turn lanes in the eastbound and westbound directions. Fund the installation of ATSAC at this intersection.
- o 32. Vermont Avenue and Torrance Boulevard -- Restrict parking and restripe Vermont Avenue to provide a right-turn-only lane in the northbound and southbound directions.
- o 33. Vermont Avenue and Carson Street -- Restrict parking and restripe Vermont Avenue to convert the existing eastbound right-turn-only lane into a through/right optional lane.
- o 34. I-110 Freeway Southbound Off-Ramp and 190th Street -- Restripe 190th Street to provide three travel lanes in the eastbound and westbound directions. Modify the signal to provide a southbound right-turn phase extension concurrent with the initiation of the eastbound through phase.
- o 35. I-110 Freeway Northbound On-Ramp and 190th Street -- Modify the median island, restrict parking and restripe 190th Street to provide dual eastbound left-turn lanes.

- o 36. Figueroa Street and 190th Street -- Restrict parking and restripe Figueroa Street to provide a southbound right-turn-only lane.
- o 38. Figueroa Street and I-110 Freeway Northbound On/Off-Ramps -- Restripe Figueroa Street and modify the signal to provide northbound dual left-turn lanes.
- o 39. Hamilton Avenue and Torrance Boulevard -- Restripe Hamilton Avenue to provide a left/right optional lane and a right-turn-only lane.
- o 40. Figueroa Street and Torrance Boulevard -- Remove the sidewalk along the south curb, restrict parking and restripe Torrance Boulevard to provide a left-turn-only lane, a through/left optional lane, and through/right optional lane in the eastbound direction. Modify the signal to provide opposed east-west phasing.
- o 41. I-110 Freeway Southbound On/Off-Ramps and Carson Street -- Restripe Carson Street and modify the signal to provide dual left-turn lanes in the westbound direction.

Upon completion of the above improvements, project traffic impacts will be reduced to a level of insignificance at all but two intersections. Significant traffic impacts may also remain along area freeways.

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## INTRODUCTION

The applicant, McDonnell Douglas Realty Company, plans to redevelop a 170-acre site located southwest of the San Diego Freeway and Harbor Freeway interchange in the City of Los Angeles. The proposed Harbor Gateway Center Master Plan project will be located on the parcel currently occupied by the McDonnell Douglas Aircraft Company. As shown on Figure 1, Site Vicinity Map, this site is bounded by 190th Street on the north, the Southern Pacific Railroad tracks paralleling Normandie Avenue on the east, industrial and residential properties on the south, and Western Avenue and industrial/vacant properties on the west.

As part of the environmental review process for the project, the applicant has retained Crain & Associates to assess the traffic impact of the proposed land development on the surrounding street and freeway system. This report represents the results of an analysis of existing conditions as well as projected traffic conditions after completion of the proposed project. As requested by the Los Angeles Department of Transportation, a detailed evaluation of existing and future peak hour traffic conditions has been completed at the forty-one study intersections listed below:

1. Hawthorne Boulevard and 190th Street
2. Crenshaw Boulevard and 182nd Street
3. Crenshaw Boulevard and San Diego Freeway southbound on/off-ramps
4. Crenshaw Boulevard and 190th Street
5. Crenshaw Boulevard and Del Amo Boulevard
6. San Diego Freeway northbound on/off-ramps and 182nd Street
7. Western Avenue and Artesia Boulevard
8. Western Avenue and 182nd Street

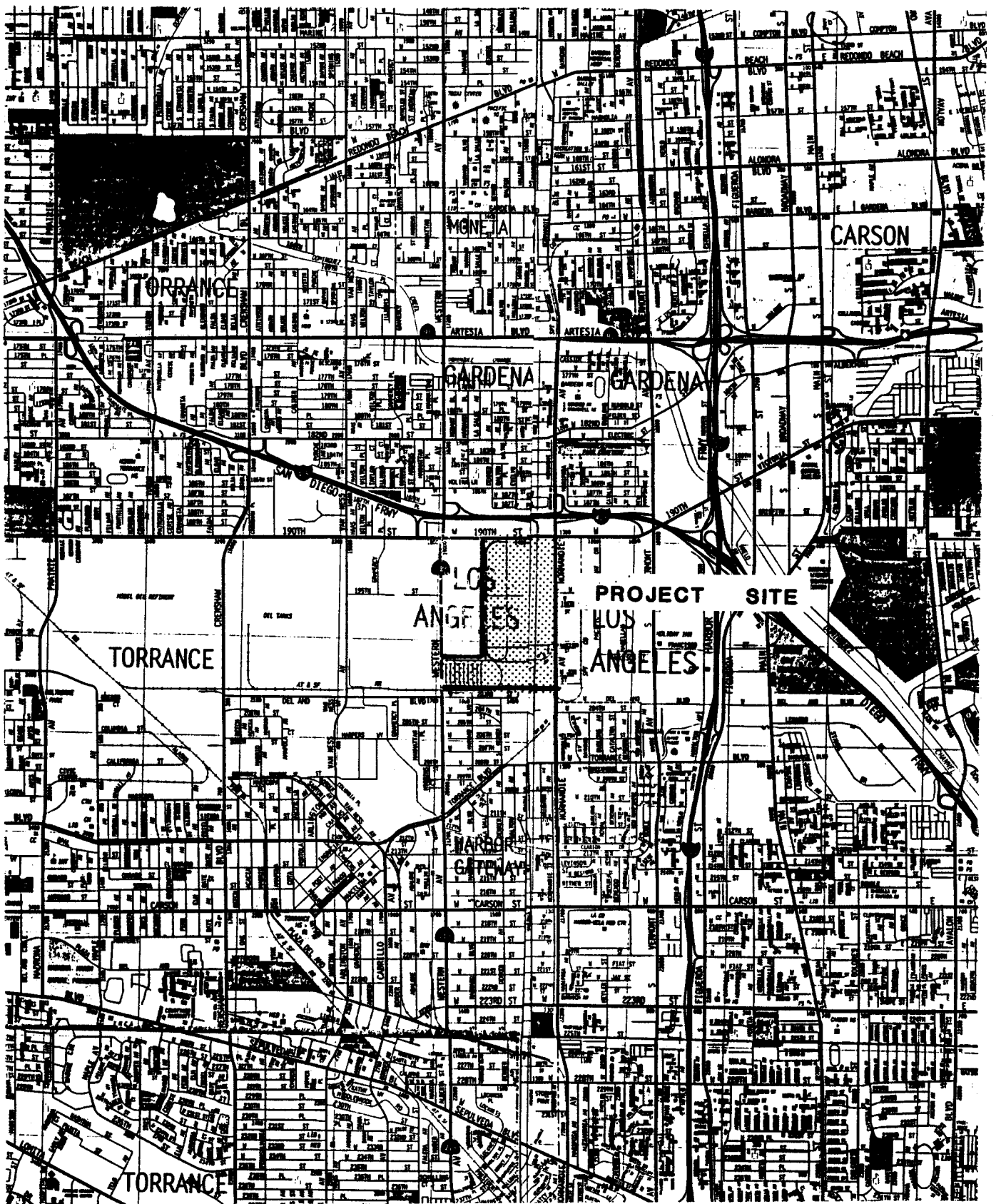


FIGURE 1

# PROJECT VICINITY MAP



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 Los Angeles, California 90025  
 (310) 473-6508

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9. Western Avenue and San Diego Freeway northbound on/off-ramps
10. San Diego Freeway southbound on/off-ramps
11. Western Avenue and 190th Street
12. Western Avenue and 195th Street
13. Western Avenue and Project Driveway
14. Western Avenue and Del Amo Boulevard
15. Western Avenue and Torrance Boulevard
16. Western Avenue and Carson Street
17. Western Avenue and Sepulveda Boulevard
18. Western Avenue and Pacific Coast Highway
19. Project Driveway and 190th Street
20. Artesia Boulevard and Normandie Avenue
21. Normandie Avenue and 182nd Street
22. Normandie Avenue and San Diego Freeway northbound on/off-ramps
23. San Diego Freeway off-ramp and 190th Street
24. Normandie Avenue and 190th Street
25. Normandie Avenue and Project Driveway/Francisco
26. Normandie Avenue and Torrance Boulevard
27. Normandie Avenue and Carson Street
28. Normandie Avenue and Sepulveda Boulevard
29. Normandie Avenue and Pacific Coast Highway
30. Vermont Avenue and Artesia Boulevard
31. Vermont Avenue and 190th Street
32. Vermont Avenue and Torrance Boulevard
33. Vermont Avenue and Carson Street
34. Harbor Freeway southbound off-ramp and 190th Street
35. Harbor Freeway northbound on-ramp and 190th Street

36. Figueroa Street and 190th Street
37. Hamilton Avenue and Harbor Freeway southbound on/off-ramps
38. Figueroa Street and Harbor Freeway northbound on/off-ramps
39. Hamilton Avenue and Torrance Boulevard
40. Figueroa Street and Torrance Boulevard
41. Harbor Freeway southbound on/off-ramps and Carson Street

These study intersections are within the area near the project site and are the locations most likely to be directly impacted by the project's traffic generation.

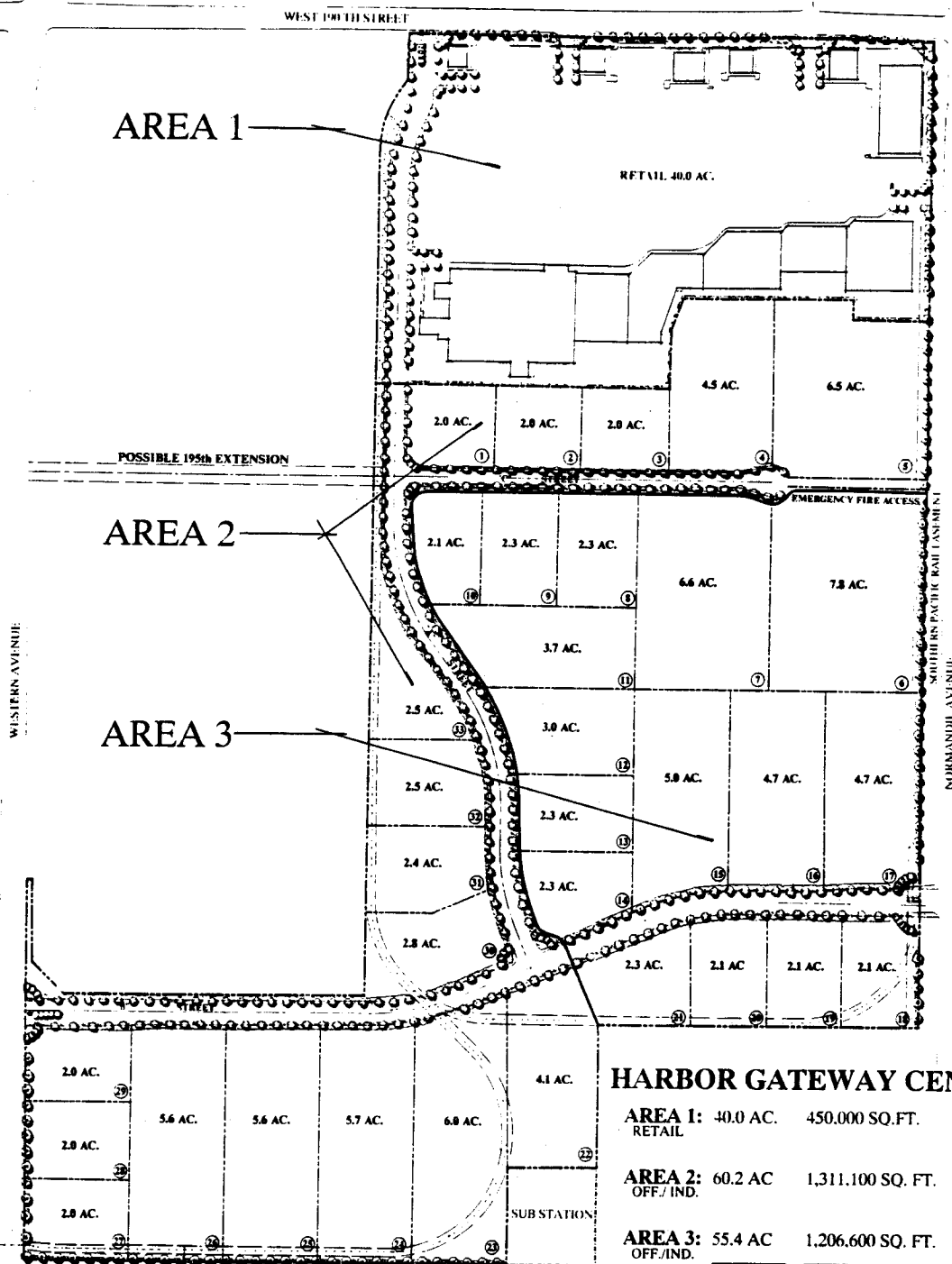


## PROJECT DESCRIPTION

The project under consideration is the development of 170 acres southwest of the intersection of the San Diego Freeway and Harbor Freeway. The multi-use development plan consists of a 450,000 square foot shopping center on 42.1 gross acres and a 128.1 gross acre industrial/office park. Development in the industrial/office park could consist of up to 2,010,700 square feet of industrial park uses and up to 507,000 square feet of office park uses. The shopping center has been assumed to include up to 10,000 square feet of quality restaurant, 10,000 square feet of high-turnover restaurant, 10,000 square feet of fast-food restaurant and 4,000 theater seats.

The site is currently occupied by a complex of industrial buildings totaling 2,419,000 square feet. These buildings are occupied by the McDonnell Douglas Aircraft Company. Until recently, the buildings were used for aircraft manufacturing and assembly, with approximately 5,500 employees working at the site. Currently, the buildings are used as a warehousing and distribution facility. All existing buildings would be removed from the site as part of the project.

Access to the site will be provided from 190th Street, Normandie Avenue, and Western Avenue. As shown in Figure 2, an internal roadway system will intersect each of these roadways. Additionally, access via an extension of 195th Street across the adjacent vacant site to the west, formerly used by Lockheed Aircraft, could be provided as part of the redevelopment of that site. Individual industrial and office parcels will, in general, receive all access from this internal roadway system. The exception is three parcels in the southwest corner of the site which will receive direct access from Western Avenue.



### HARBOR GATEWAY CENTER

AREA 1: 40.0 AC. RETAIL	450,000 SQ. FT.	2.1 ROAD AC.
AREA 2: 60.2 AC OFF./IND.	1,311,100 SQ. FT.	10.3 ROAD AC.
AREA 3: 55.4 AC OFF./IND.	1,206,600 SQ. FT.	2.2 ROAD AC.
<b>TOTAL</b>	<b>155.6 AC.</b>	<b>2,967,700 SQ. FT. 14.6 ROAD AC.</b>

GROSS ACRES 170.2

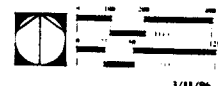
EXISTING DEVELOPMENT 2,419,000 SQ. FT.  
TO BE DEMOLISHED

NET NEW DEVELOPMENT 548,700 SQ. FT.

## CONCEPT MAP

Harbor Gateway Center  
McDonnell Douglas Realty Co.

FIGURE 2



## PROJECT SITE PLAN



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In addition to driveways to be located along the main north-south internal roadway, the project's shopping center would receive direct access from 190th Street and Normandie Avenue. The 190th Street driveways would include a major driveway located opposite the southbound San Diego Freeway off-ramp. The Normandie Avenue access would be provided via up to two crossings of the Southern Pacific Railroad tracks.

## ENVIRONMENTAL SETTING

As described previously, the site of the Harbor Gateway Shopping Center and Industrial Office/Park is situated in the Torrance-Gardena Corridor District of the City of Los Angeles. This area is served by three regional freeway facilities: the San Diego Freeway, the Harbor Freeway and the Artesia Freeway. This area once contained heavy industrial and oil refining facilities with surrounding, interspersed residential and agricultural areas. In recent years, new development in this area has been generally of the commercial office, office park and industrial park types. Some of this development (such as TRW) is oriented toward the remaining aerospace industry located in Torrance, Redondo Beach, and El Segundo. Other developments (such as offices for the Toyota and Nissan auto import/distribution companies) are oriented toward the Los Angeles-Long Beach Harbor facilities. This area is also well-served by other modes of transportation. Aside from the existing surface streets and freeway systems with good transit services, the harbor facilities, Los Angeles International Airport and several major rail facilities are located nearby.

The existing regional freeway system provides excellent access to this site. The project site is conveniently linked with Los Angeles International Airport (approximately 6 miles to the northwest) via the San Diego Freeway, and with Downtown Los Angeles (approximately 15 miles to the north) via the Harbor Freeway. San Pedro and the Los Angeles Harbor, approximately 7 miles to the south, are also conveniently accessible via the Harbor Freeway. Direct ramp access for the San Diego Freeway is provided by the Western Avenue and Normandie Avenue interchanges. Direct access to the Artesia and Harbor Freeways is provided via Artesia Boulevard to the north, 190th Street to the east and Torrance Boulevard to the south.

## Streets and Highways

Two of the most important east-west highway facilities serving the project site and surrounding areas are 190th Street and Artesia Boulevard. Both streets are designated as major highways. 182nd Street is an important secondary arterial located approximately midway between 190th Street and Artesia Boulevard. Other important east-west arterials in this area are Torrance Boulevard and Carson Street, both to the south of the project site.

In the project vicinity, 190th Street is generally 85 feet wide. 190th Street operates as a four-lane arterial with left-turn channelization provided at all intersections. Double left-turn lanes have been provided on the eastbound approach at Western Avenue, and right-turn-only lanes have been installed where the demand is high and where there is sufficient room to accommodate the additional lane. During the morning and afternoon peak traffic periods, parking prohibitions are utilized so that 190th Street from west of Western Avenue to east of the Harbor Freeway operates as a six-lane facility, in order to more effectively handle the heavier peak traffic demands. The southbound San Diego Freeway off-ramp intersects 190th Street opposite the project site. This ramp, where it intersects with 190th Street, is 36 feet wide, providing for a two-lane approach, with one left-turn-only lane and one right-turn-only lane. This approach is presently controlled by a STOP sign.

Artesia Boulevard, from Normandie Avenue to just west of Western Avenue, is a six-lane highway which becomes a four-lane facility to the west. A typical cross-section of this highway includes two (divided) 35-foot roadways with a 14-foot wide raised median which provides for left-turn channelization at all intersections. Artesia Boulevard transitions directly into the Artesia Freeway immediately east of Vermont Avenue.

Del Amo Boulevard to the west of Western Avenue is 71 feet wide, and to the east is designated as 203rd Street and is 32 feet wide. This street operates as a two-lane facility in each direction with left-turn channelization provided at major intersections. The roadway is discontinuous throughout the area to the east of Western Avenue.

Torrance Boulevard is a four-lane highway west of the Harbor Freeway and becomes a two-lane facility and ends to the east of Main Street. Left-turn channelization is provided at all intersections. A typical cross-section of this highway to the west of the Harbor Freeway is 60 feet in width.

Two of the most prominent north-south highway facilities in the study area are Western Avenue and Vermont Avenue. Both of these arterials have been designated Major Highways on the City's General Plan. Other important north-south routes in this area include Crenshaw Boulevard to the west and Figueroa Street and Normandie Avenue to the east.

Western Avenue presently operates as a four-lane facility throughout this area, although localized improvements at 190th Street have made it possible to provide three through lanes in each direction. Double left-turn lanes for northbound traffic desiring to turn west onto 190th Street towards the southbound San Diego Freeway on-ramp are also provided. Dual southbound left-turn lanes are provided as well. North of 190th Street, Western Avenue is 110 feet wide, but tapers to an 84-foot width further to the north. South of 190th Street, Western Avenue is 98 feet wide, and provides three travel lanes in each direction. Further to the south, Western Avenue provides two northbound and three southbound travel lanes.

Vermont Avenue, throughout the study area, is fully developed to a width of 80 feet, except along the east side in front of Ascot Park (between 182nd Street and the San Diego Freeway) where the shoulder area remains unimproved. This arterial provides for two lanes of traffic in each direction with left-turn channelization provided at all intersections. The on-ramp to the northbound San Diego Freeway is located along Vermont Avenue approximately 380 feet north of 190th Street. This ramp is 28 feet wide at Vermont Avenue, but narrows to a single lane before it merges with the freeway. As part of their ramp metering system, Caltrans presently meters this on-ramp during peak hours. Although the ramp queues are often substantial, they generally do not impact surface street traffic flow along Vermont Avenue.

Normandie Avenue presently operates as a four-lane facility throughout the study area, with left-turn channelization at intersections. Immediately north and south of 190th Street, Normandie Avenue is 72 feet wide but is narrower further to the south. A southbound on-ramp for the San Diego Freeway is provided just north of 190th Street on Normandie Avenue. Northbound on- and off-ramps to the San Diego Freeway are also provided further to the north.

#### Existing Traffic Volumes

Traffic volume count data was obtained from the City of Los Angeles and Caltrans. New counts were conducted by Crain & Associates at all study locations where recent counts were not available. The counts were used to determine the existing traffic and turning movement volumes at each of the study locations during the AM and PM peak periods. The AM peak hour traffic volumes at the study intersections are summarized in Figure 3(a) for 1996 conditions. The corresponding PM peak hour volumes are shown in Figure 3(b).





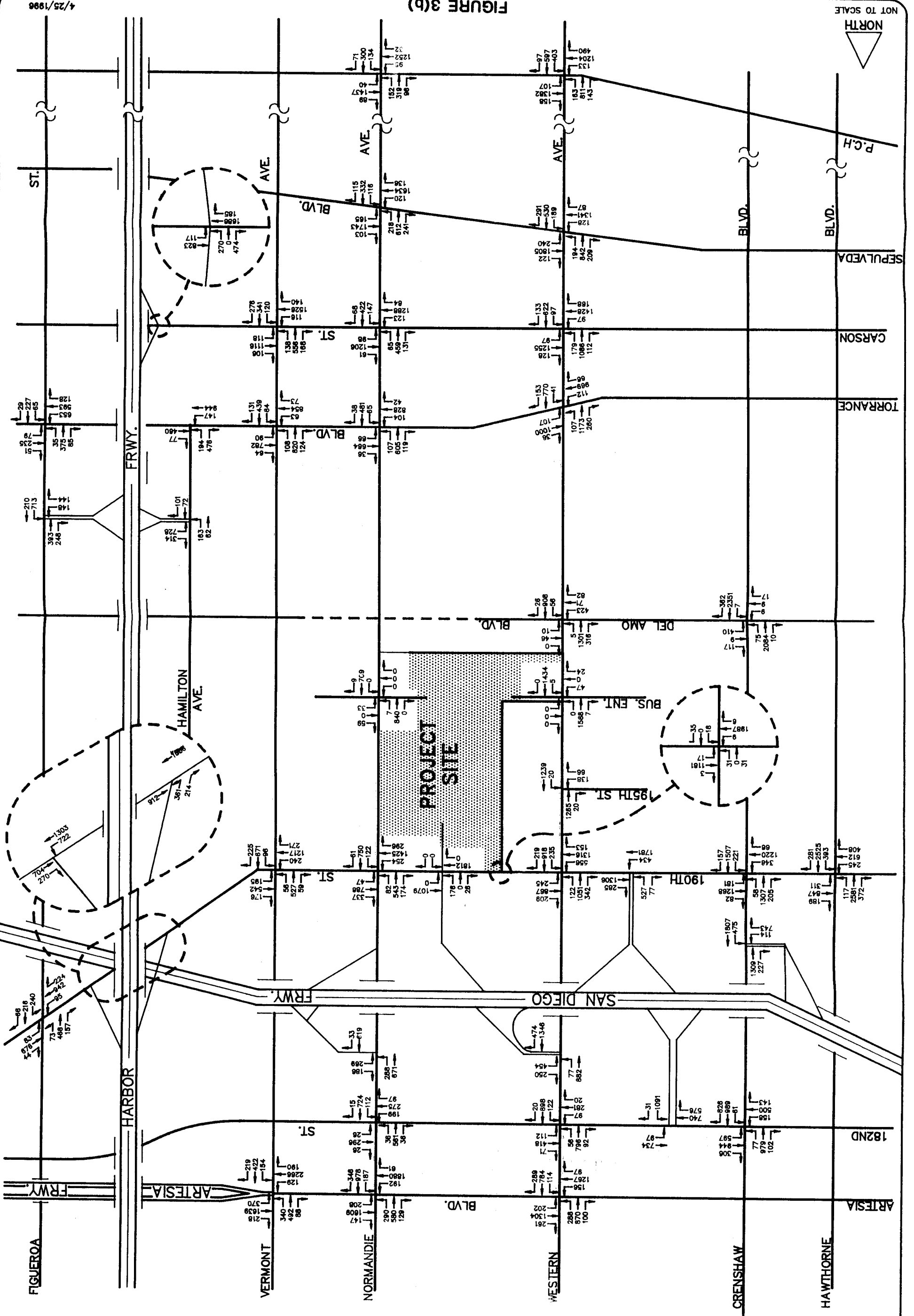
EXISTING (1996) TRAFFIC VOLUMES  
PM PEAK HOUR

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FIGURE 3(b)



## Public Transportation

The site is served by two bus lines which are operated by Gardena Transit (Line 2) and Torrance Transit (Line 6). These bus lines operate along the roadways adjacent to the proposed project site. These and other connecting bus lines offer extensive access to adjacent South Bay communities and also provide convenient, direct access into Downtown Los Angeles.

The following bus lines operate adjacent to the proposed development:

Gardena Line 2. This "rectangular" route involves primarily north-south travel on Western Avenue, Normandie Avenue, and Vermont Avenue, between Pacific Coast Highway on the south and Imperial Highway on the north. Half-hour headways are typical in both directions during all hours of operation.

Torrance Line 6. This linear line provides service between the Del Amo Center and Torrance Civic Center to the southwest and Cal State Dominguez Hills and the Artesia Station of the Metro Blue Line to the east. In the vicinity of the project site it operates along 190th Street. It provides service on half-hour headways in both directions during peak periods on Mondays through Fridays. No midday, night or weekend service is provided.

The following bus lines also operate in the study area, although somewhat further away from the project site than would be considered within normal walking distance for transit access:

Torrance Line 1. This bus line provides service between the Del Amo Fashion Square regional shopping center in Torrance and Union Station in Downtown Los Angeles. This route crosses on Carson Street to Vermont Avenue, then

proceeds north to Gardena Boulevard and then north on Figueroa Street to where it enters the Harbor Freeway at El Segundo Boulevard. Buses exit the freeway at Martin Luther King, Jr. Boulevard and then traverse the Downtown Los Angeles area to the terminus at Union Station. Buses on this route operate on a typical headway of one hour, but service with half-hour headways is provided during peak commuter periods (6:00 - 9:00 AM and 3:00 - 6:00 PM). Access for the handicapped is provided on all of the buses operated on this line.

MTA Line 130. This line operates east-west between King Harbor in Redondo Beach and the Fullerton Park-and-Ride Lot at Orangethorpe Avenue and Magnolia Avenue. Intermediate portions of this route run primarily along Artesia Boulevard, but the route diverts south at Vermont Avenue, turning easterly at 190th Street. Daylight service is provided on typical headways of one hour, several days per week. Access for the handicapped is provided on all of these buses.

MTA Line 445. This line offers peak hour commuter service between San Pedro and Alpine Village (approximately one mile southeast of the project site), and Downtown Los Angeles. Most of this route runs along the Harbor Freeway but traverses Downtown on surface streets. Five buses each provide service Monday through Friday, into Downtown during the peak AM commuter period and outbound during the PM peak period.

The bus lines discussed above provide important service to the existing industrial and residential areas, and office facilities located near the proposed development.

### Analysis of Existing Conditions

The traffic analysis was performed through use of established traffic engineering techniques. The traffic counts described earlier were utilized so as to reflect any recent changes in traffic demand patterns. Other data pertaining to intersection geometrics, transit stop locations, parking related curb restrictions, pedestrian facilities, and signal operations were obtained through field surveys of the study area street system.

The Critical Movement Analysis (CMA) methodology used for the analysis and evaluation of traffic conditions at each study intersection is based on procedures outlined in Circular Number 212 of the Transportation Research Board<sup>1</sup>. In the discussion of the CMA method for signalized intersections, procedures have been developed for grading the operational quality of an intersection in terms of the "Level of Service" (LOS) which describes different traffic flow characteristics. LOS A to C operate quite well. LOS D typically is the level for which a metropolitan area street system is designed. LOS E represents volumes at or near the capacity of the street which might result in stoppages of momentary duration and fairly unstable flow. LOS F occurs when a facility is overloaded and is characterized by stop-and-go traffic with stoppages of long duration.

A determination of the LOS at an intersection, where traffic volumes are known or have been projected, can be obtained through a summation of the critical movement volumes: the highest combination of conflicting movements which must be accommodated at that intersection. Once the sum of critical movement volumes has been obtained, the values in Table 1 can be used to determine the applicable LOS.

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<sup>1</sup> Interim Materials on Highway Capacity, Circular Number 212, Transportation Research Board, Washington, D. C., 1980.

**Table 1**  
**Critical Movement Volume Ranges\***  
**For Determining Levels of Service**

<u>Level of Service</u>	<u>Maximum Sum of Critical Volumes (VPH)</u>		
	<u>Two Phase</u>	<u>Three Phase</u>	<u>Four or More Phases</u>
A	900	855	825
B	1,050	1,000	965
C	1,200	1,140	1,100
D	1,350	1,275	1,225
E	1,500	1,425	1,375
F	-----Not Applicable-----		

\* For planning applications only, i.e., not appropriate for operations and design applications. Also, a computerized traffic signal coordination systems, such as the Automated Traffic Surveillance and Control (ATSAC), increase these values by approximately seven percent.

"Capacity" represents the maximum volume of vehicles in the critical lanes which has a reasonable expectation of passing through an intersection in one hour, under prevailing roadway and traffic conditions. For planning purposes, capacity equates to the maximum value of LOS E, as indicated in Table 1. The CMA values used in this study were calculated by dividing the sum of critical movement volumes by the appropriate capacity value for the type of signal control present or proposed at the study intersections. The Level of Service values are defined as a range of CMA values and shown in Table 2.

**Table 2**  
**Level of Service**  
**As a Function of CMA Values**

<u>Level of Service</u>	<u>Interpretation</u>	<u>Range of CMA Values</u>
A	Uncongested operations; all vehicles clear in a single cycle.	$\leq 0.60$
B	Same as above.	$>0.60 \leq 0.70$
C	Light congestion; occasional backups on critical approaches.	$>0.70 \leq 0.80$
D	Congestion on critical approaches, but intersection functional. Vehicles required to wait through more than one cycle during short peaks. No long-standing lines formed. Used as the desirable level for design in many cities.	$>0.80 \leq 0.90$
E	Severe congestion with some long-standing lines on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements.	$>0.90 \leq 1.00$
F	Forced flow with stoppages of long duration.	$> 1.00$

By applying this analysis procedure to the study intersections, the CMA value and the corresponding LOS for existing traffic conditions were calculated. Those values for existing (1996) AM and PM peak hour conditions are shown in Table 3.

**Table 3**  
**Critical Movement Analysis Summary**  
**Existing Traffic Conditions**

	<u>Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
		<u>CMA</u>	<u>LOS</u>	<u>CMA</u>	<u>LOS</u>
1.	Hawthorne Blvd. and 190th St.	1.010	F	1.033	F
2.	Crenshaw Blvd. and 182nd St.	0.909	E	1.065	F
3.	Crenshaw Blvd. and San Diego Fwy. S/B on/off-ramps	0.913	E	0.827	D
4.	Crenshaw Blvd. and 190th St.	1.237	F	1.240	F
5.	Crenshaw Blvd. and Del Amo Blvd.	0.807	D	0.868	D
6.	San Diego Fwy. N/B on/off-ramps and 182nd St.	0.880	D	0.877	D
7.	Western Ave. and Artesia Blvd.	0.982	E	0.988	E
8.	Western Ave. and 182nd St.	0.418	A	0.605	B
9.	Western Ave. and San Diego Fwy. N/B on/off-ramps	0.607	B	0.735	C
10.	San Diego Fwy. S/B on/off-ramps and 190th St.	1.063	F	0.975	E
11.	Western Ave. and 190th St.	0.712	C	0.915	E
12.	Western Ave. and 195th St.	0.481	A	0.391	A
13.	Western Ave. and Project Dwy.	0.354	A	0.410	A
14.	Western Ave. and Del Amo Blvd.	0.707	C	0.747	C
15.	Western Ave. and Torrance Blvd.	0.625	B	0.716	C
16.	Western Ave. and Carson St.	0.777	C	1.023	F
17.	Western Ave. and Sepulveda Blvd.	0.991	E	1.080	F
18.	Western Ave. and Pacific Coast Hwy.	0.964	E	0.997	E
19.	Project Dwy. and 190th St.	0.435	A	0.729	C
20.	Normandie Ave. and Artesia Blvd.	0.874	D	1.002	F
21.	Normandie Ave. and 182nd St.	0.311	A	0.513	A

**Table 3 (cont.)**  
**Critical Movement Analysis Summary**  
**Existing Traffic Conditions**

	<u>Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
		<u>CMA</u>	<u>LOS</u>	<u>CMA</u>	<u>LOS</u>
22.	Normandie Ave. and San Diego Fwy. N/B on/off-ramps	0.519	A	0.561	A
23.	San Diego Fwy. S/B off-ramp and 190th St.	0.470	A	0.839	D
24.	Normandie Ave. and 190th St.	0.665	B	0.930	E
25.	Normandie Ave. and Project Dwy./ Francisco St.	0.329	A	0.341	A
26.	Normandie Ave. and Torrance Blvd.	0.617	B	0.619	B
27.	Normandie Ave. and Carson St.	0.600	A	0.811	D
28.	Normandie Ave. and Sepulveda Blvd.	0.708	C	0.770	C
29.	Normandie Ave. and Pacific Coast Hwy.	0.502	A	0.561	A
30.	Vermont Ave. and Artesia Blvd.	0.913	E	0.883	D
31.	Vermont Ave. and 190th St.	0.716	C	1.013	F
32.	Vermont Ave. and Torrance Blvd.	0.673	B	0.740	C
33.	Vermont Ave. and Carson St.	0.747	C	0.853	D
34.	Harbor Fwy. S/B off-ramp and 190th St.	0.429	A	0.759	C
35.	Harbor Fwy. N/B on-ramp and 190th St.	0.357	A	0.716	C
36.	Figuerroa St. and 190th St.	0.486	A	0.737	C
37.	Hamilton Ave. and Harbor Fwy. S/B on/off-ramps	0.423	A	0.423	A
38.	Figuerroa St. and Harbor Fwy. N/B on/off-ramps	0.694	B	0.786	C
39.	Hamilton Ave. and Torrance Blvd.	0.743	C	0.673	B
40.	Figuerroa St. and Torrance Blvd.	0.667	B	0.768	C
41.	Harbor Fwy. S/B on/off-ramps and Carson St.	0.850	D	0.738	C



## PROJECT TRAFFIC

The following section contains information describing the vehicular trip generating characteristics of the proposed project. It also presents the methodology used to estimate the trip generation, distribution and assignment of the project traffic.

### Traffic Generation

Traffic-generating characteristics of the land uses similar to the proposed project have been surveyed and documented by the Institute of Transportation Engineers (ITE). Those studies have indicated that land uses of the size associated with the proposed project generally exhibit the following trip-making characteristics.

**Table 4**  
**Project Trip Generation Formulas**

Shopping Center - (per 1,000 sq. ft.)

Daily:  $\ln(T) = 0.625 \ln(A) + 5.985$   
AM Peak Hour:  $\ln(T) = 0.589 \ln(A) + 2.378$ ; I/B = 63%, O/B = 37%  
PM Peak Hour:  $\ln(T) = 0.637 \ln(A) + 3.553$ ; I/B = 50%, O/B = 50%

Restaurant (Quality) - (per 1,000 sq. ft.)

Daily:  $\ln(T) = 0.900 \ln(A) + 4.746$   
AM Peak Hour:  $T = 0.87(A)$ ; I/B = 63%, O/B = 37%  
PM Peak Hour:  $T = 7.39(A)$ ; I/B = 67%, O/B = 33%

Restaurant (High-Turnover) - (per 1,000 sq. ft.)

Daily:  $T = 177.87(A)$   
AM Peak Hour:  $T = 14.81(A)$ ; I/B = 51%, O/B = 49%  
PM Peak Hour:  $T = 12.92(A)$ ; I/B = 56%, O/B = 44%

Restaurant (Fast-Food) - (per 1,000 sq. ft.)

Daily:  $T = 710.08(A)$   
AM Peak Hour:  $T = 55.87(A)$ ; I/B = 51%, O/B = 49%  
PM Peak Hour:  $T = 36.56(A)$ ; I/B = 52%, O/B = 48%

Movie Theater - (per seat)

Daily:  $T = 0.48(A)$   
AM Peak Hour:  $T = 0.03(A)$ ; I/B = 63%, O/B = 37%  
PM Peak Hour:  $T = 0.06(A)$ ; I/B = 64%, O/B = 36%

**Table 4 (cont.)**  
**Project Trip Generation Formulas**

Industrial Park - (per 1,000 sq. ft.)

Daily:  $T = 4.949 \ln(A) + 765.587$   
 AM Peak Hour:  $\ln(T) = 0.818 \ln(A) + 0.916$ ; I/B = 82%, O/B = 18%  
 PM Peak Hour:  $T = [(1.027/A) + 0.00064]^{-1}$ ; I/B = 21%, O/B = 79%

Office Park - (per 1,000 sq. ft.)

Daily:  $T = 0.835 \ln(A) + 3.435$   
 AM Peak Hour:  $T = 0.818 \ln(A) + 1.679$ ; I/B = 89%, O/B = 11%  
 PM Peak Hour:  $T = 0.825 \ln(A) + 1.418$ ; I/B = 15%, O/B = 85%

Warehouse/Distribution Center - (per 1,000 sq. ft.)

Daily:  $T = 3.68(A) + 342.65$   
 AM Peak Hour:  $T = 0.382 (A) + 79.314$ ; I/B = 72%, O/B = 28%  
 PM Peak Hour:  $T = 0.488 (A) + 74.974$ ; I/B = 35%, O/B = 65%

Accordingly, on the basis of the traffic generation formulas in Table 4, the projected amount of new traffic volume that could be generated by the proposed mixed-use project is shown in Table 5. Appendix A separates this generation by project phase. It should be noted that Table 5 and Appendix A contain standard internal trip generation and pass-by trip adjustments. These reflect that many of the trips to and from the site will utilize more than one facility and/or will be made as part of a larger trip which would have traveled past the site whether or not the center was present.

Trip Distribution

The next step in the process was the determination of the geographic distribution of project trips. A primary factor affecting trip direction is the relative distribution of the housing from which employees of the proposed business/industrial park and patrons of the shopping center would be drawn. Each trip to and from the project site will be linked to another site somewhere in the region. These trip linkages are analyzed by the City of Los Angeles Framework computerized traffic model. This model considers the land-use patterns throughout the Southern California area to

**Table 5**  
**Project Traffic Generation**

<u>Land Use Category</u>	<u>Size (Sq. Ft.)</u>	<u>Daily Traffic</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		
			<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>Total</u>
Shopping Center Gross Generation							
Retail	355,000	13,840	196	115	656	656	1,312
Restaurant - Quality	10,000	910	6	3	50	24	74
Restaurant - High Turnover	10,000	1,780	75	73	72	57	129
Restaurant - Fast Food	10,000	7,100	285	274	190	176	366
Theater - 4,000 seats	65,000	1,930	76	44	154	86	240
Subtotal	450,000	25,560	638	509	1,122	999	2,121
Less Shopping Center Internal/Pass-By Trips							
Retail (0%/20%)		(2,770)	(39)	(23)	(131)	(131)	(262)
Restaurant - Quality (20%/10%)		(270)	(2)	(1)	(15)	(7)	(22)
Restaurant - High Turnover (20%/20%)		(710)	(30)	(29)	(29)	(23)	(52)
Restaurant - Fast Food (20%/50%)		(4,970)	(200)	(192)	(133)	(123)	(256)
Theater (10%/10%)		(390)	(15)	(9)	(31)	(17)	(48)
Subtotal		(9,110)	(286)	(254)	(339)	(301)	(640)
Net Shopping Center Generation		16,450	352	255	783	698	1,481

Table 5 (cont.)

Project Traffic Generation

<u>Land Use Category</u>	<u>Size (Sq. Ft.)</u>	<u>Daily Traffic</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
			<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
Shopping Center	450,000	16,450	352	255	783	698
Office Park	507,000	5,630	779	96	106	598
Industrial Park	2,010,700	10,720	1,105	150	131	741
Site Generation	2,967,700	32,800	2,236	501	1,020	2,037
Less Existing Site Generation Warehouse	(2,419,000)	(8,560)	(608)	(237)	(387)	(718)
Net Site Generation	<u>548,700</u>	<u>24,240</u>	<u>1,628</u>	<u>264</u>	<u>633</u>	<u>1,319</u>
						<u>1,952</u>

estimate current trip-making patterns. It also considers future land-use growth patterns to determine how trip linkages and travel patterns may change over time, due to shifts in the housing and/or employment base locations. In particular, the model considers the amount of housing and employment growth or decline within each subarea comprising the modeled area to determine changes in the distance each area's residents must travel to find adequate employment opportunities.

The estimated directional trip distribution resulting from this analysis is shown in Table 6.

**Table 6**  
**Directional Regional Trip Distribution**

<u>Direction</u>	<u>Percentage of Trips</u>
North	30%
South	30
East	25
West	<u>15</u>
	100%

#### Traffic Assignment

The City of Los Angeles Framework computerized traffic model was utilized to assign project-related traffic to individual roadways within the study area. In doing so, the model accounted for the level of congestion on each roadway and determined which travel path produced the shortest travel time for each trip. The results of this computerized assignment were carefully examined for "reasonableness", but no adjustments were considered necessary to reflect likely travel paths. It should be noted that the computer model assumes drivers will follow the most direct, rational path. The direct path methodology has been shown to produce the most reliable overall traffic projections. Further, this procedure concentrates traffic volumes and any necessary roadway improvements on the preferred (Major) routes, rather than

assignment provides the necessary level of detail to conduct the traffic analysis. The resulting project trips on the surrounding roadway system are shown in Figures 4(a) and 4(b).

#### Parking and Access

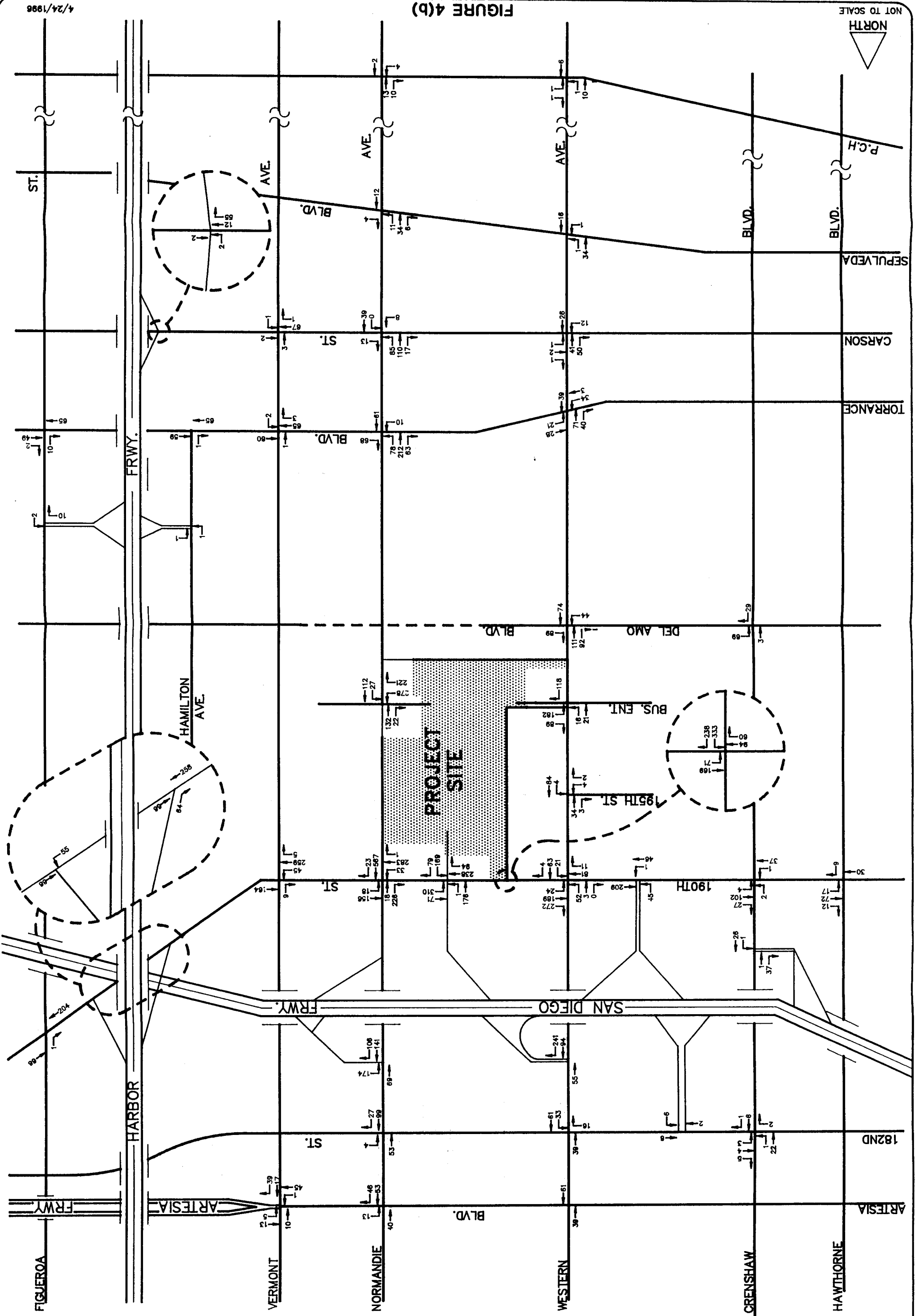
Parking lots/structures supporting the individual uses will be constructed as build out of the multi-use development is completed. All parcels will be provided sufficient parking to meet code requirements within that parcel. For the shopping center, this may include consideration of shared parking between the theater, restaurant and retail uses.

Access to the site will be provided from 190th Street, Normandie Avenue, and Western Avenue. As shown in Figure 2, an internal roadway system will intersect each of these roadways. Additionally, access via an extension of 195th Street across the adjacent vacant site to the west, formerly used by Lockheed Aircraft, could be provided as part of the redevelopment of that site.

Individual industrial and office parcels will, in general, receive all access from this internal roadway system. As an exception, up to three industrial/office parcels could also receive direct access from the surrounding street system. These parcels are located in the southwest corner of the project and would receive direct access from Western Avenue.

The project's shopping center would receive direct access from 190th Street and Normandie Avenue in addition to driveways to be located along the main north-south internal roadway. The 190th Street driveways would include a major driveway located opposite the southbound San Diego Freeway off-ramp. The Normandie Avenue access would be provided via up to two crossings of the Southern Pacific Railroad tracks.







In addition to the shopping center driveways, two other railroad crossings would be used to access the project site. One would be an emergency-only access roadway opposite Knox Street. The other would be an upgrade of the existing driveway accessing the site opposite Francisco Street. Since the Southern Pacific Railroad track involved in all of these crossings is a very lightly used rail line, these crossings are considered appropriate.

The intersections of the major project access roads and driveways with the public street system would be signalized. A total of five locations are proposed to be signalized, including:

- o Western Avenue and Project Roadway (existing signal)
- o 190th Street and Project Roadway (relocated signal)
- o 190th Street and San Diego Freeway Southbound Off-Ramp/Shopping Center Drive (new signal)
- o Normandie Avenue and Shopping Center Driveway (new railroad crossing/signal)
- o Normandie Avenue and Project Roadway/Francisco Street (existing signal)

Of these, two have existing signals, one will have a relocated existing signal and a fourth is at the intersection of a freeway ramp and a major highway. The final signal is needed to allow a full four-way driveway across the railroad tracks paralleling Normandie Avenue. Thus, all five signals are considered necessary.

## FUTURE TRAFFIC CONDITIONS

There are a number of other projects either under construction or planned for development which will add new traffic volumes to the study area. For this reason, the analysis of future traffic conditions has been expanded to include potential traffic volumes expected to be generated by projects that have not yet been developed but are planned within the study area in the near future.

The transportation network used in the model to project future traffic conditions was based on the City of Los Angeles Framework traffic forecasting model, which was developed using the regional model developed by the Southern California Association of Governments (SCAG) and the Los Angeles Regional Transportation Study (LARTS) section of Caltrans. The SCAG/LARTS model is the primary long-range transportation planning tool for the Los Angeles region. Of particular relevance, this model includes provisions of an expanded High-Occupancy Vehicle (HOV) lane network, such as the recently completed or currently under construction HOV lanes on the Harbor, San Diego, Ventura, Hollywood and Simi Valley Freeways, as well as those programmed for the Antelope Valley Freeway. This model also considers the impacts of the expanding transit network, including extension of the Metro Blue-Line. However, it does not include other improvements considered less assured. Examples include trip reduction measures required by the South Coast Air Quality Management District (SCAQMD) and the Los Angeles County Congestion Management Program (CMP).

While the Framework model provides an overall view of the transportation patterns and characteristics within the Los Angeles area, its emphasis on subregional planning does not provide the level of detail necessary to forecast individual turning movements at specific intersections with acceptable precision. As part of this study, the roadway network contained within the Framework model was refined to better

reflect the capacities and constraints of the transportation system within the study area, specifically the study intersections and freeway interchanges.

#### Related Projects/Cumulative Growth

The SCAG regional and the City of Los Angeles land use data were augmented by a search for specific development projects within the study area, which are on file with the Cities of Los Angeles, Torrance, Carson and Gardena. These "related projects" included projects which are completed but not fully occupied, are currently under construction or beginning construction, or are presently only proposed but which could become operational within the time frame examined in this study.

It should be noted that the related projects list was developed in consultation with the planning staffs from each relevant jurisdiction. In particular, extensive discussions were held with the City of Torrance Planning Department to make certain that the Allied Signal and other related projects near the project were represented as accurately as possible.

From a review of these lists, it was determined that traffic from thirty-five projects near the study site would produce additional traffic at the study intersections. These related projects are listed and described in Table 7. The locations of these related projects are shown in Figure 5.

To determine the 2006 "null" or non-project traffic conditions, the greater of the trip generation for each zone, based on a comparison of the City of Los Angeles land-use growth projections data, and the sum of the new related projects proposed for each zone, was used as the incremental growth for that zone. The resulting 2006 AM and PM peak hour traffic volume estimates are shown in Figures 6(a) and (b), respectively. These estimates form the basis for determining project traffic impacts

**Table 7**  
**Related Projects List**

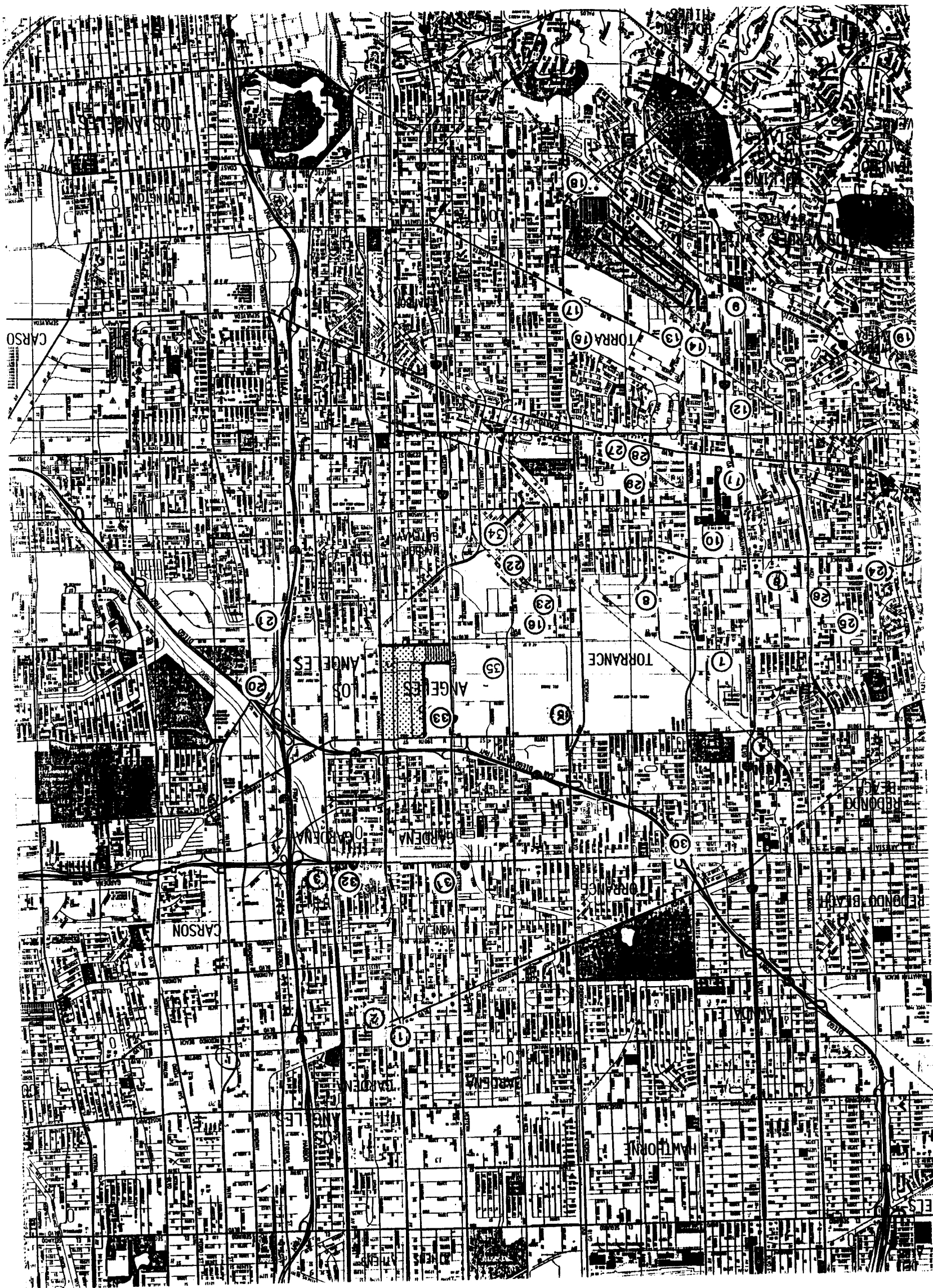
<b><u>Project No.</u></b>	<b><u>Description</u></b>	<b><u>Reference No.</u></b>	<b><u>Location</u></b>
1.	25,000 s.f. Church		1251 W. Redondo Beach Blvd.
2.	Expansion from 8,030 s.f. to 37,000 s.f. of Office		1116 W. Redondo Beach Blvd.
3.	54,000 s.f. Supermarket		NEC Western Ave. & Artesia Blvd.
4.	195-Unit Senior Housing and Recreation Bldg.	CUP 94-0001	4502 186th St.
5.	14,000 s.f. Fitness Center	CUP 95-0006	SEC 190th St. & Crenshaw Ave.
6.	135,000 s.f. Hospital Addition	CUP 94-0005	4101 Torrance Blvd.
7.	44,326 Office/Warehouse	CUP 94-0035	3500 Challenger St.
8.	8,000 s.f. Retail	CUP 94-0025	540 Maple Ave.
9.	72-Unit Senior Citizen Condominiums	CUP 93-0005	23860 Los Codona Ave.
10.	46,000 s.f. Office	CUP 90-32	SEC Amie Ave. & Torrance Blvd.
11.	7,219 Restaurant	CUP 95-0016	21880 Hawthorne Blvd.
12.	33,898 Office		NWC Hawthorne Blvd. & 230th St.
13.	24,530 sf Hospital Expansion	CUP 76-90	3330 Lomita Blvd.
14.	60,000 s.f. Medical Office	PP 72-14	3400/3440 Lomita Blvd.
15.	36-Unit Senior Citizen Condominiums	CUP 93-0036	235th St. SS between Elm Ave. & Crenshaw Blvd.
16.	191,196 s.f. Industrial/Warehouse Building		Amapola Ave. between 208th St. & Dominguez St.
17.	167,000 s.f. Storage Facility 6,175 s.f. Retail	CUP 96-0002	WS Crenshaw Blvd. N/O Lomita Blvd.
18.	Remodeling Shopping Center; Demolish 30,475 Retail/ Restaurant; Demolish 29,944 s.f. Health Club; Remove 15 Tennis Courts; Construct 16,700 Retail/ Restaurant; Addition of 14 Screens to an Existing 6-screen Theatre		Rolling Hills Plaza Shopping Center

**Table 7 (cont.)  
Related Projects List**

<b><u>Project No.</u></b>	<b><u>Description</u></b>	<b><u>Reference No.</u></b>	<b><u>Location</u></b>
19.	28-Unit Single Family Homes	2C 91-2	220 Via Riviera
20.	640,000 s.f. Retail 159,000 Office 127,000 Light Industrial		Carson Towne Center
21.	1,870,000 s.f. Retail		Metro 2000 Outlet Center
22.	18-Unit Single Family Homes	CUP 94-0013	1425 Engracia
23.	20,400 s.f. Office/Warehouse	MOD 95-0006	NEC Madrid & Dominguez Wy.
24.	90-Unit Condominiums	CUP 88-62	5501 Torrance Blvd.
25.	54-Unit Condominiums	CUP 90-2	4921 Spencer St.
26.	11,094 s.f. Church	CUP 95-0026	4625 Garnet St.
27.	131-Unit Condominiums	PD 89-1	2801 Sepulveda Blvd.
28.	52-Unit Condominiums	PD 89-2	2801 Sepulveda Blvd.
29.	84-Unit Condominiums	ZC 90-1	2825 Plaza Del Amo
30.	14,200 s.f. Auto Service Center	CUP 94-0022	SEC Artesia Blvd. & Prairie Ave.
31.	190,000 s.f. Shopping Center		NEC Western Ave. & Artesia Blvd.
32.	3,245 s.f. Mini-Mart/Gas Station		NWC Vermont Blvd. & Artesia Blvd.
33.	755,000 s.f. Shopping Center 3,500 seat Theatre		SEC Western Ave. & 190th St.
34.	44-Unit Townhomes Brisas Del Mar		NWC El Prado & Cravens Ave.
35.	177,500 s.f. Food Manufacturing		19,800 S. Van Ness Blvd.



FIGURE 5



FUTURE (2006) TRAFFIC VOLUMES  
WITHOUT PROJECT  
AM PEAK HOUR

CRAIN & ASSOCIATES  
2007 Sawtelle Boulevard  
Los Angeles, California 90025  
(310) 473-6508  
Transportation Planning - Traffic Engineering

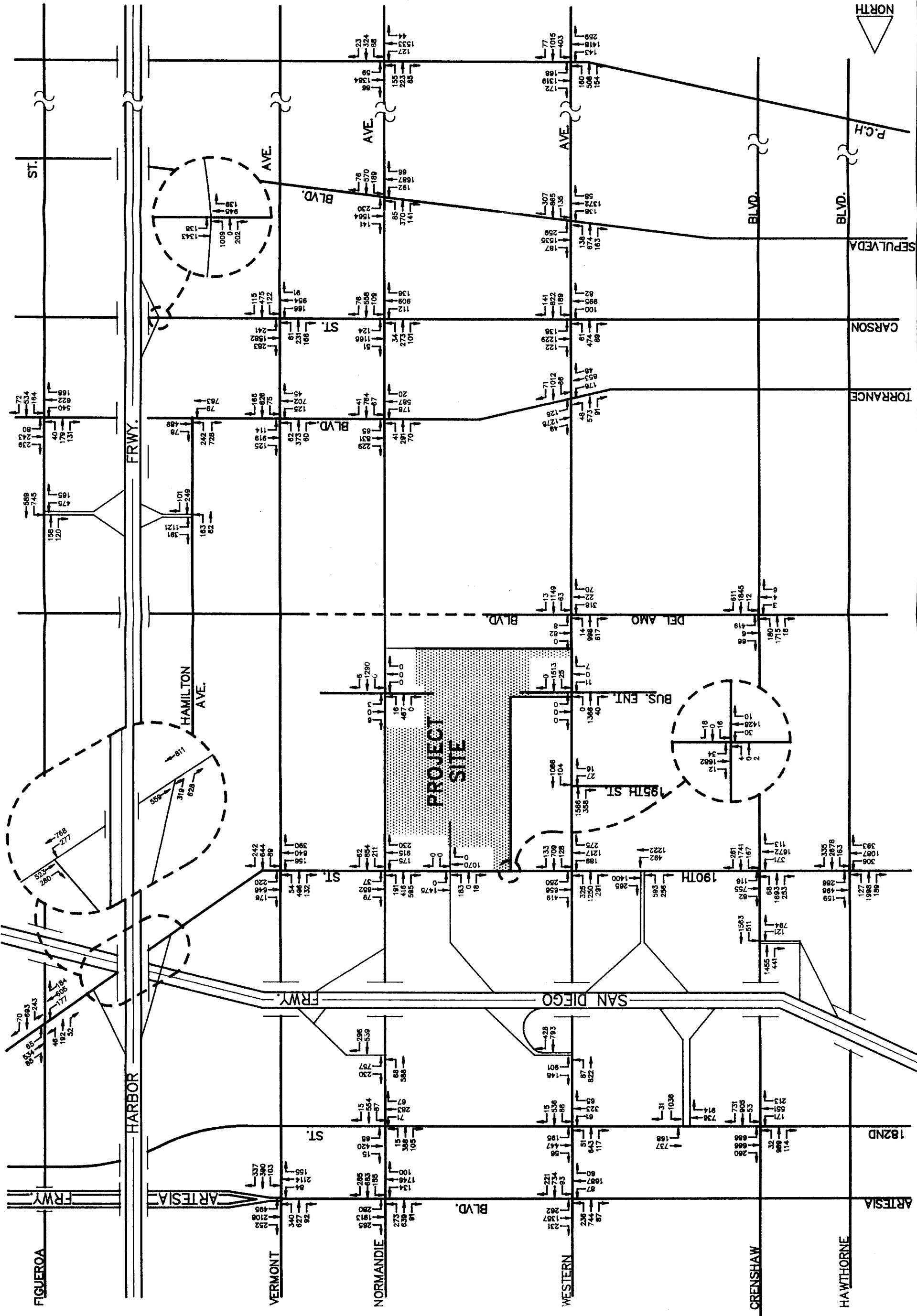


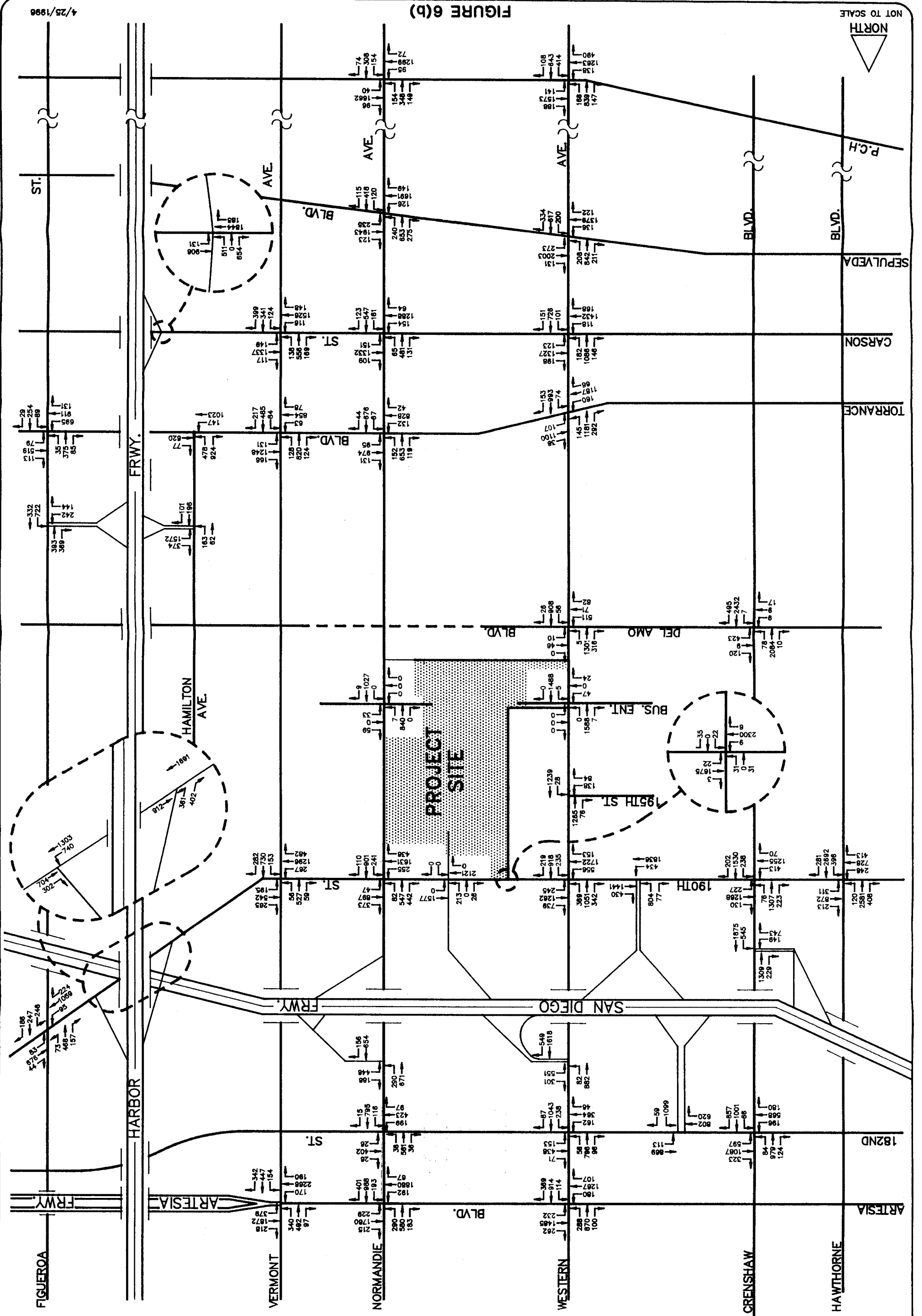
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4/25/1996

FIGURE 6(a)

NOT TO SCALE







on the street system. Future (2006) AM and PM peak hour traffic volumes with the proposed project traffic are shown in Figures 7(a) and (b), respectively.

Analysis of Future Traffic Conditions (With and Without Project)

The analysis of future conditions in the study area was performed using the same Critical Movement Analysis procedures described previously in this report. The results of the Critical Movement Analysis for future traffic conditions at the study intersections are summarized in Table 8. The table shows that at a majority of the study intersections future traffic conditions will likely be at low levels of congestion with and without the proposed project.

As determined by LADOT, a “significant traffic impact” attributable to a project can occur within three ranges of CMA values as follows:

**Criteria for Significant Traffic Impact**

<u>Final CMA Value</u>	<u>Project-Related Increase in CMA Value</u>
0.700 - 8.00	equal to or greater than 0.040
0.800 - 0.900	equal to or greater than 0.020
0.900 or greater	equal to or greater than 0.010

As indicated in Table 8, the proposed project, prior to any mitigation, could have significant traffic impacts at thirty-two intersections during the morning and/or evening peak hours.

# FUTURE (2006) TRAFFIC VOLUMES WITH PROJECT AM PEAK HOUR

**CRAIN & ASSOCIATES**  
2007 Sawtelle Boulevard  
Los Angeles, California 90025  
(310) 473-6508  
Transportation Planning - Traffic Engineering

FN: MCDONNEL\AM2006WP

4/25/1996



NOT TO SCALE

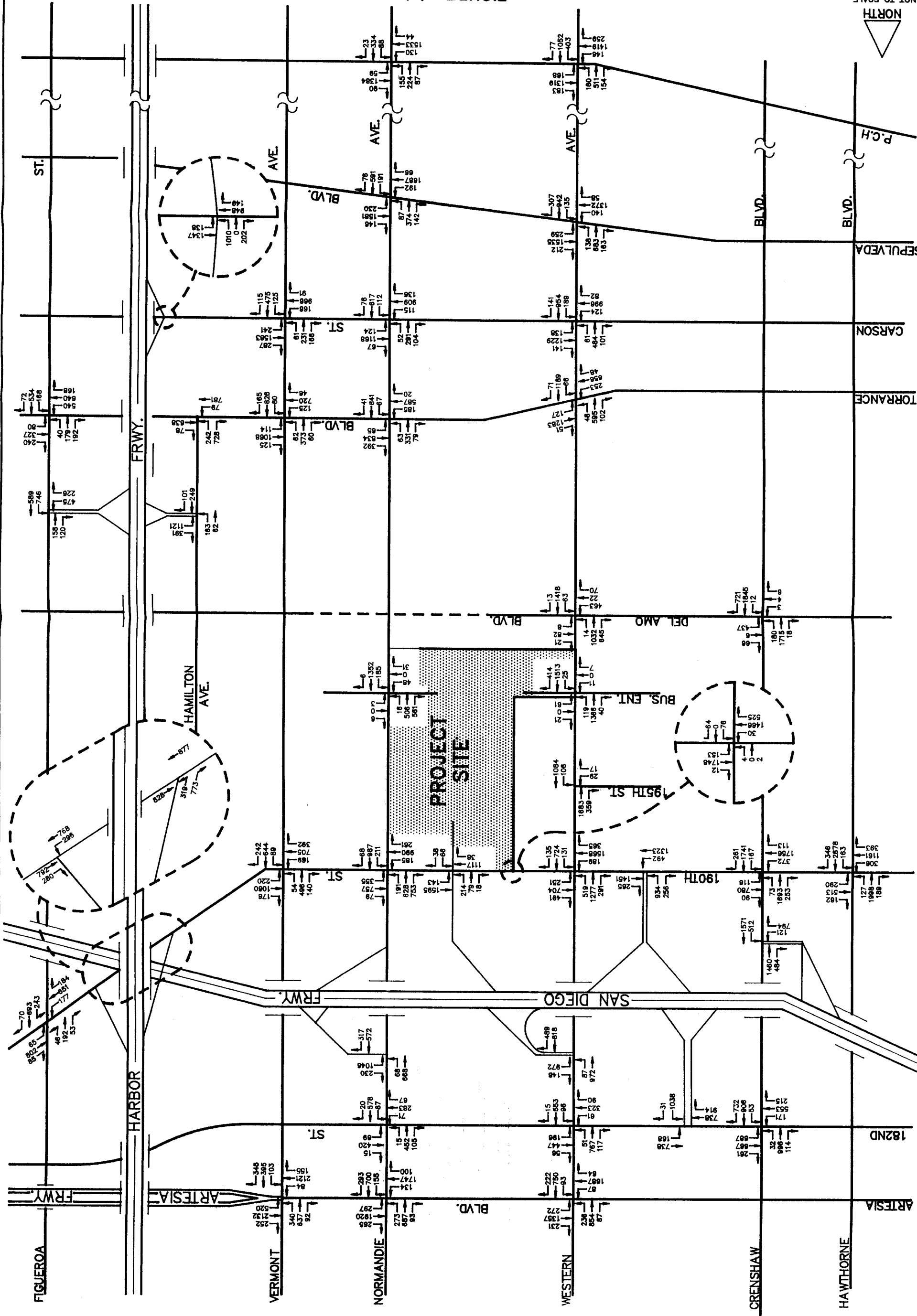


FIGURE 7(a)

FUTURE (2006) TRAFFIC VOLUMES  
WITH PROJECT  
PM PEAK HOUR

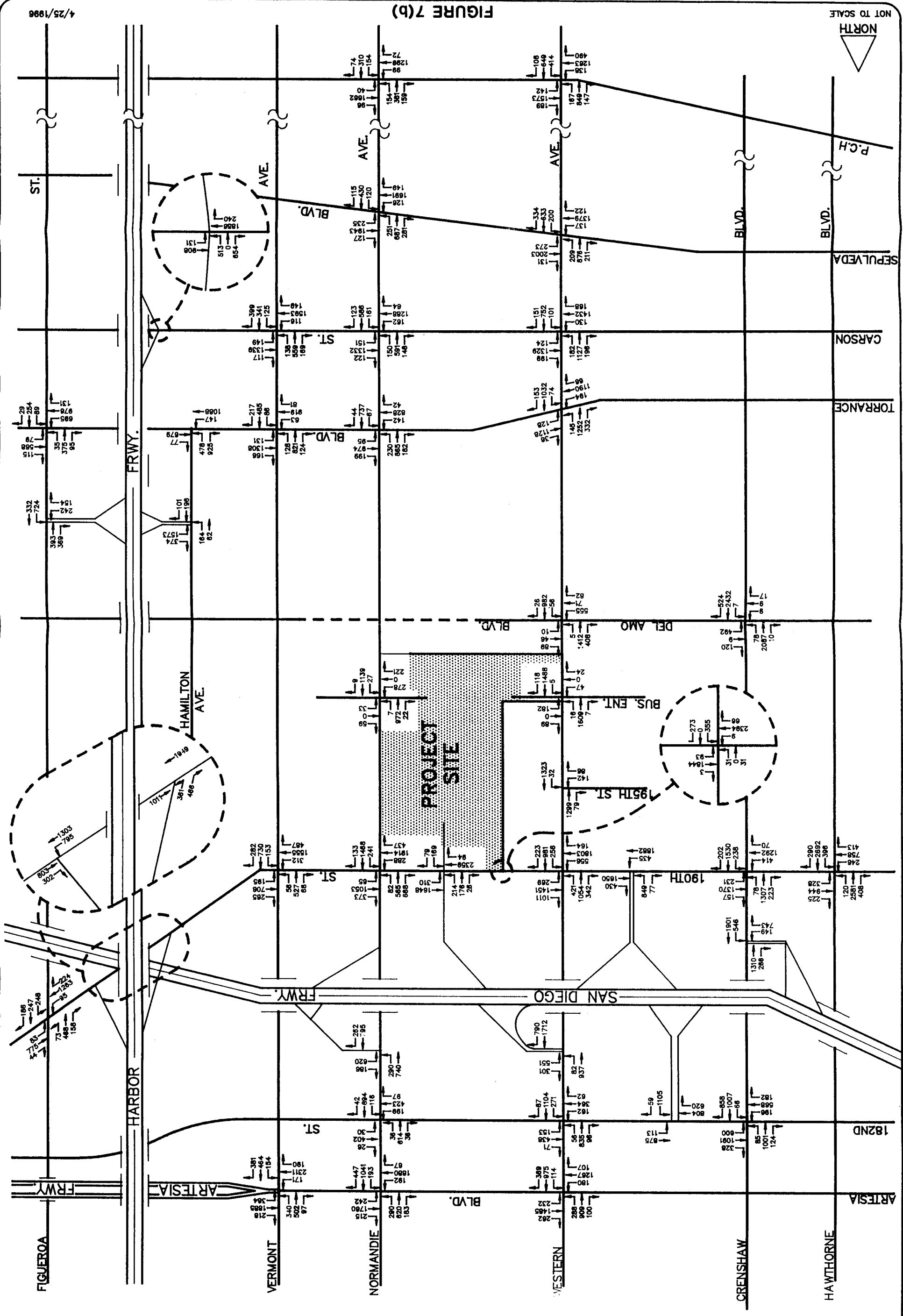
CRAIN & ASSOCIATES  
2007 Sawtelle Boulevard  
Los Angeles, California 90025  
(310) 473-6508  
Transportation Planning - Traffic Engineering



FILE: MCDONNEL\PM2006WP

4/25/1996

FIGURE 7(b)



**Table 8**  
**Critical Movement Analysis Summary**  
**Future (Year 2006) Traffic Conditions**

No.	Intersection	Peak Period	Without Project		With Project Without Mitigation		
			CMA	LOS	CMA	LOS	IMPACT
1.	Hawthorne Blvd. and 190th St.	AM PM	1.048 1.043	F F	1.076 1.069	F F	+0.028* +0.026*
2.	Crenshaw Blvd. and 182nd St.	AM PM	0.985 1.167	E F	0.987 1.175	E F	+0.002 +0.008
3.	Crenshaw Blvd. and San Diego Fwy. S/B on/off-ramps	AM PM	0.944 0.865	E D	0.956 0.873	E D	+0.012* +0.008
4.	Crenshaw Blvd. and 190th St.	AM PM	1.286 1.305	F F	1.316 1.343	F F	+0.030* +0.038*
5.	Crenshaw Blvd. and Del Amo Blvd.	AM PM	0.881 0.927	D E	0.913 0.959	E E	+0.032* +0.032*
6.	San Diego Fwy. N/B on/off-ramps and 182nd St.	AM PM	0.959 0.935	E E	0.960 0.938	E E	+0.001 +0.003
7.	Western Ave. and Artesia Blvd.	AM PM	1.052 1.096	F F	1.067 1.119	F F	+0.015* +0.023*
8.	Western Ave. and 182nd St.	AM PM	0.571 0.733	A C	0.627 0.769	B C	+0.056 +0.036
9.	Western Ave. and San Diego Fwy. N/B on/off-ramps	AM PM	0.671 0.878	B D	0.704 0.909	C E	+0.033 +0.031*
10.	San Diego Fwy. S/B on/off-ramps	AM PM	1.134 1.119	F F	1.272 1.209	F F	+0.138* +0.090*
11.	Western Ave. and 190th St.	AM PM	0.820 1.113	D F	0.913 1.334	E F	+0.093* +0.221*
12.	Western Ave. and 195th St.	AM PM	0.636 0.582	B A	0.665 0.597	B A	+0.029 +0.015
13.	Western Ave. and Project Dwy.	AM PM	0.361 0.410	A A	0.585 0.547	A A	+0.224 +0.137
14.	Western Ave. and Del Amo Blvd.	AM PM	0.784 0.805	C D	0.914 0.880	E D	+0.130* +0.075*
15.	Western Ave. and Torrance Blvd.	AM PM	0.836 0.874	D D	0.954 0.917	E E	+0.118* +0.043*
16.	Western Ave. and Carson St.	AM PM	0.832 1.045	D F	0.898 1.059	D F	+0.066* +0.014*

\* Denotes significant impact

**Table 8 (cont.)**  
**Critical Movement Analysis Summary**  
**Future (Year 2006) Traffic Conditions**

<b>No.</b>	<b>Intersection</b>	<b>Peak Period</b>	<b>Without Project</b>		<b>With Project Without Mitigation</b>		
			<b>CMA</b>	<b>LOS</b>	<b>CMA</b>	<b>LOS</b>	<b>IMPACT</b>
17.	Western Ave. and Sepulveda Blvd.	AM PM	1.062 1.144	F F	1.089 1.158	F F	+ 0.027* + 0.014*
18.	Western Ave. and Pacific Coast Hwy.	AM PM	1.042 1.052	F F	1.055 1.056	F F	+ 0.013* + 0.004
19.	Project Dwy. and 190th St.	AM PM	0.599 0.839	A D	0.821 1.160	D F	+ 0.222* + 0.321*
20.	Artesia Blvd. and Normandie Ave.	AM PM	0.897 1.016	D F	0.908 1.040	E F	+ 0.011* + 0.024*
21.	Normandie Ave. and 182nd St.	AM PM	0.415 0.569	A A	0.436 0.611	A B	+ 0.021 + 0.042
22.	Normandie Ave. and San Diego Fwy. N/B on/off-ramps	AM PM	0.653 0.674	B B	0.767 0.814	C D	+ 0.114* + 0.140*
23.	San Diego Fwy. off-ramp and 190th St.	AM PM	0.698 0.983	B E	0.680 1.003	B F	- 0.018 + 0.020*
24.	Normandie Ave. and 190th St.	AM PM	0.862 1.113	D F	1.133 1.415	F F	+ 0.271* + 0.302
25.	Normandie Ave. and Project Dwy./ Francisco St.	AM PM	0.449 0.411	A A	0.528 0.742	A C	+ 0.079 + 0.331*
26.	Normandie Ave. and Torrance Blvd.	AM PM	0.767 0.797	C C	0.868 0.899	D D	+ 0.101* + 0.102*
27.	Normandie Ave. and Carson St.	AM PM	0.697 0.863	B D	0.731 0.906	C E	+ 0.034 + 0.043*
28.	Normandie Ave. and Sepulveda Blvd.	AM PM	0.788 0.880	C D	0.797 0.892	C D	+ 0.009 + 0.012
29.	Normandie Ave. and Pacific Coast Hwy.	AM PM	0.561 0.652	A B	0.566 0.663	A B	+ 0.005 + 0.011
30.	Vermont Ave. and Artesia Blvd.	AM PM	0.919 0.889	E D	0.933 0.910	E E	+ 0.014* + 0.021*
31.	Vermont Ave. and 190th St.	AM PM	0.865 1.155	D F	0.901 1.248	E F	+ 0.036* + 0.093*
32.	Vermont Ave. and Torrance Blvd.	AM PM	0.803 0.884	D D	0.853 0.905	D E	+ 0.050* + 0.021*

\* Denotes significant impact

**Table 8 (cont.)**  
**Critical Movement Analysis Summary**  
**Future Traffic Conditions**

<b>No.</b>	<b>Intersection</b>	<b>Peak Period</b>	<b>Without Project</b>		<b>With Project Without Mitigation</b>		
			<b>CMA</b>	<b>LOS</b>	<b>CMA</b>	<b>LOS</b>	<b>IMPACT</b>
33.	Vermont Ave. and Carson St.	AM	0.837	D	0.838	D	+ 0.001
		PM	0.917	E	0.939	E	+ 0.022*
34.	Harbor Fwy. S/B off-ramp and 190th St.	AM	0.647	B	0.799	C	+ 0.152*
		PM	0.805	D	0.890	D	+ 0.085*
35.	Harbor Fwy. N/B on-ramp and 190th St.	AM	0.371	A	0.461	A	+ 0.090
		PM	0.728	C	0.798	C	+ 0.070*
36.	Figueroa St. and 190th St.	AM	0.557	A	0.647	B	+ 0.090
		PM	0.782	C	0.851	D	+ 0.069*
37.	Hamilton Ave. and Harbor Fwy. S/B on/off-ramps	AM	0.686	B	0.686	B	+ 0.000
		PM	0.816	D	0.817	D	+ 0.001
38.	Figueroa St. and Harbor Fwy. N/B on/off-ramps	AM	0.803	D	0.823	D	+ 0.020*
		PM	0.864	D	0.869	D	+ 0.005
39.	Hamilton Ave. and Torrance Blvd.	AM	0.837	D	0.937	E	+ 0.100*
		PM	1.078	F	1.118	F	+ 0.040*
40.	Figueroa St. and Torrance Blvd.	AM	0.851	D	0.876	D	+ 0.025*
		PM	1.011	F	1.060	F	+ 0.049*
41.	Harbor Fwy. S/B on/off-ramps and Carson St.	AM	1.180	F	1.182	F	+ 0.002
		PM	0.925	E	0.942	E	+ 0.017*

\* Denotes significant impact

## IMPACTS ON REGIONAL TRANSPORTATION SYSTEM

To address the increasing public concern that traffic congestion was impacting the quality of life and economic vitality of the State of California, the Congestion Management Program (CMP) was enacted by Proposition 111. The intent of the CMP is to provide the analytical basis for transportation decisions through the State Transportation Improvement Program (STIP) process. A countywide approach has been established by the Metropolitan Transportation Authority, the Local CMP agency, to implement the statutory requirements of the CMP. The Countywide approach includes designating a highway network that includes all state highways and principal arterials within the County and monitoring the network's Level of Service standards. This monitoring of the CMP network is one of the responsibilities of local jurisdictions. If level of service standards deteriorate, then local jurisdictions must prepare a deficiency plan to be in conformance with the Countywide plan.

All development projects which are required to prepare an EIR are subject to the Land Use Analysis program of the CMP. This requirement is to provide decision-makers with the project-specific traffic impacts created by large projects on the CMP highway network. Traffic volumes attributable to the proposed project, as determined earlier, were analyzed as an incremental increase to the "without project" conditions. This methodology allowed for both an assessment of overall future freeway conditions and a determination of the project impacts to these regional transportation facilities.

In order to analyze the impact of the proposed project on the regional transportation system (i.e., the freeway network), the results of the computerized transportation model were again examined. Future year 2006 freeway volumes, including project traffic, were forecast in the same manner as for the surface street intersections.

The Level of Service values used for freeway segment analyses is estimated by calculating the demand-to-capacity (D/C) ratio and using the LOS definitions shown in Table 9. The peak hour volumes shown in Table 10 were compared to freeway capacities, based on 2,000 vehicles per hour per lane (VPHPL) and 1,500 VPHPL for HOV lanes, in order to determine the demand-to-capacity ratio (D/C) and corresponding Level of Service. The results of this comparison are shown in Table 11.

**Table 9**  
**Freeway Mainline Level of Service Definitions**

<u>D/C Ratio</u>	<u>LOS</u>	<u>D/C Ratio</u>	<u>LOS*</u>
0.00 - 0.35	A	> 1.00 - 1.25	F(0)
> 0.35 - 0.54	B	> 1.25 - 1.35	F(1)
> 0.54 - 0.77	C	> 1.35 - 1.45	F(2)
> 0.77 - 0.93	D	> 1.45	F(3)
> 0.93 - 1.00	E		

---

\* LOS F(1) through F(3) represent severe congestion (travel speeds less than 25 MPH) for more than one hour.

Source: Los Angeles County Metropolitan Transportation Authority, Congestion Management Program, 1993.

As Table 11 shows, the area freeway system will be heavily congested with or without the project. The project will add incrementally to these significant cumulative impacts. The project will have significant impacts at up to four locations during the morning peak hour and in the opposite direction at the same four locations in the PM peak hour. These will be addressed by the overall Congestion Management Program (CMP) improvements, such as those included in the mitigation section of this report.



**Table 10**  
**Existing and Future**  
**Peak Hour Freeway Traffic Volumes**

CMP Station	Direction	Peak Hour	Existing Volume	Future	
				Without Project Volume	With Project Volume
I-405 Freeway:					
Santa Fe Ave. (1064)	N/B	AM	7,386	7,342	7,581
		PM	6,003	6,425	6,503
	S/B	AM	7,866	8,725	8,762
		PM	10,475	10,862	11,041
North of Carson St. (1065)	N/B	AM	8,093	7,965	8,225
		PM	7,792	8,434	8,532
	S/B	AM	7,055	8,054	8,106
		PM	11,174	11,696	11,929
Marine Ave. (1066)	N/B	AM	9,024	9,353	9,393
		PM	10,352	10,959	11,162
	S/B	AM	7,638	7,666	7,880
		PM	11,995	11,910	11,980
I-110 Freeway:					
South of "C" St. (1044)	N/B	AM	4,293	4,580	4,630
		PM	2,710	2,981	3,001
	S/B	AM	2,786	3,107	3,119
		PM	4,258	4,745	4,798
South of Manchester Blvd. (1045)	N/B	AM	11,995	13,075	13,094
		PM	8,262	9,314	9,399
	S/B	AM	7,820	9,906	10,007
		PM	7,886	10,274	10,312
SR-91 Freeway:					
East of Alameda St. (1035)	E/B	AM	8,824	10,333	10,372
		PM	16,761	18,260	18,461
	W/B	AM	15,528	16,888	17,141
		PM	8,839	10,175	10,246
East of Cherry Ave. (1036)	E/B	AM	8,899	8,166	8,183
		PM	14,070	13,886	13,980
	W/B	AM	12,940	12,959	13,082
		PM	9,114	8,496	8,525

**Table 11**  
**Project Freeway Impacts**  
**Existing and Future Levels of Service**

CMP Station	Direction	Peak Hour	Future						
			Existing		Without Project		With Project		
			V/C	LOS	V/C	LOS	V/C	LOS	Impact
I-405 Freeway:									
Santa Fe Ave. (1064)	N/B	AM	0.92	D	0.92	D	0.95	E	0.03*
		PM	0.75	C	0.80	D	0.81	D	0.01
	S/B	AM	0.98	E	1.09	F(0)	1.10	F(0)	0.00
		PM	1.31	F(1)	1.36	F(2)	1.38	F(2)	0.02*
North of Carson St. (1065)	N/B	AM	1.01	F(0)	1.00	E	1.03	F(0)	0.03*
		PM	0.97	E	1.05	F(0)	1.07	F(0)	0.01
	S/B	AM	0.88	D	1.01	F(0)	1.01	F(0)	0.01
		PM	1.40	F(2)	1.46	F(3)	1.49	F(3)	0.03*
Marine Ave. (1066)	N/B	AM	1.13	F(0)	1.17	F(0)	1.17	F(0)	0.01
		PM	1.29	F(1)	1.37	F(2)	1.40	F(2)	0.03*
	S/B	AM	0.95	E	0.96	E	0.98	F(0)	0.03*
		PM	1.50	F(3)	1.49	F(3)	1.50	F(3)	0.01
I-110 Freeway:									
South of "C" St. (1044)	N/B	AM	0.54	B	0.57	C	0.58	C	0.01
		PM	0.34	A	0.37	B	0.38	B	0.00
	S/B	AM	0.35	A	0.39	B	0.38	B	0.00
		PM	0.53	B	0.59	C	0.60	C	0.01
South of Manchester Blvd. (1045)	N/B	AM	1.50	F(3)	1.63	F(3)	1.64	F(3)	0.00
		PM	1.03	F(0)	1.16	F(0)	1.17	F(0)	0.01
	S/B	AM	0.98	E	1.24	F(0)	1.25	F(1)	0.01
		PM	0.99	E	1.28	F(0)	1.29	F(1)	0.00
SR-91 Freeway:									
East of Alameda St. (1035)	E/B	AM	0.74	C	0.86	D	0.86	D	0.00
		PM	1.40	F(2)	1.52	F(3)	1.54	F(3)	0.02*
	W/B	AM	1.29	F(1)	1.41	F(2)	1.43	F(2)	0.02*
		PM	0.74	C	0.85	D	0.85	D	0.01
East of Cherry Ave. (1036)	E/B	AM	0.89	D	0.82	D	0.82	D	0.00
		PM	1.41	F(2)	1.39	F(2)	1.40	F(2)	0.01
	W/B	AM	1.29	F(1)	1.30	F(1)	1.31	F(1)	0.01
		PM	0.91	D	0.85	D	0.85	D	0.00

\* Denotes significant project impact.

## MITIGATION MEASURES

As required by the Department of Transportation (LADOT), the project must submit a Traffic Mitigation Plan (TMP) to reduce the project's significant traffic impacts to non-significant levels. In selecting the project's traffic mitigating measures, the City's top priority is reducing trip demand by single occupancy vehicles and promoting transit use. To achieve this trip reduction goal, the City has prioritized mitigation measures by category as listed below:

1. Transportation Demand Management (TDM) Programs;
2. Transit Capacity and Access Improvements;
3. Traffic Signal Operation Improvements (ATSAC);
4. Street Widening and Other Physical Improvements; and
5. Street Restriping and Parking Prohibitions.

The project's proposed TMP includes mitigation measures in several of the categories listed above. This recommended mitigation measures are:

### Category 1 - TDM Programs

- o Compliance with Ordinance No. 168,700 (Transportation Demand Management and Trip Reduction Measures). This ordinance focuses on incorporating TDM facilities into the design of new buildings to promote alternative modes of transportation (see Appendix B). It should be followed in the design and construction of the project site and buildings.
- o Compliance with SCAQMD Rule 2202. The South Coast Air Quality Management District (SCAQMD) has adopted a rule designed to reduce the air pollution impacts of commute trips. This rule, unlike the rules it replaces, does not mandate trip reduction programs but allows individual employers to select from a variety of options. However, most employers have

continued to select ridesharing programs as the most cost-effective method of reducing air quality impacts. If site employers implement these trip reduction measures, 15 percent or more of the peak hour traffic generation from the industrial/office park component of the project could be eliminated.

#### Category 2 - Transit Improvements

- o Bus Transit Improvements. This project should work with the appropriate transit districts (i.e., Gardena Transit, Torrance Transit and MTA) to improve transit service to the site. Further, the sidewalks through the sites should be designed to provide attractive pedestrian routes to and from transit stops.

#### Categories 3, 4 and 5 - Signal System Improvements, Street Widening and Restriping, and Parking Restrictions

- o 1. Hawthorne Boulevard and 190th Street -- Restripe 190th Street and restrict parking to convert the existing eastbound and westbound right-turn-only lanes to through/right optional lanes. Modify the signal to remove the existing westbound right-turn phase.
- o 3. Crenshaw Boulevard and I-405 Freeway Southbound On/Off Ramps -- Widen and restripe Crenshaw Boulevard and modify the signal to provide northbound dual left-turn lanes.
- o 4. Crenshaw Boulevard and 190th Street -- Remove median islands, restripe and restrict parking along 190th Street to convert the existing eastbound and westbound right-turn-only lanes to through/right optional lanes.

- o 5. Crenshaw Boulevard and Del Amo Boulevard -- Restripe Del Amo Boulevard and modify the traffic signal to provide two left-turn-only lanes, a through/left optional lane and a right-turn-only lane in the westbound direction.
- o 7. Western Avenue and Artesia Boulevard -- Restripe Western Avenue and restrict parking to convert the existing northbound and southbound right-turn-only lanes to through/right optional lanes.
- o 9. Western Avenue and I-405 Freeway Northbound On/Off-Ramps -- Widen and/or modify the median island and restripe the westbound approach to the intersection (i.e., the off-ramp) to provide two left-turn-only lanes and a right-turn-only lane instead of the existing two-lane configuration.
- o 10. I-405 Freeway Southbound On/Off-Ramps and 190th Street -- Flare the west leg of the intersection, restripe 190th Street, restrict parking and modify the signal to provide dual left-turn lanes in the eastbound direction.
- o 11. Western Avenue and 190th Street -- Flare along the east curb of the south leg of the intersection and restripe to provide a northbound right-turn-only lane. Additionally, fund the installation of the City's Automated Traffic Surveillance and Control (ATSAC) signal timing system at this location. The ATSAC system provides real-time traffic flow monitoring and signal timing modifications, to maximize intersection capacity.
- o 14. Western Avenue and Del Amo Boulevard -- Restripe the eastbound approach to convert the through lane to through/left optional lane and provide east-west opposed phasing.

- o 15. Western Avenue and Torrance Boulevard -- Modify the median island and restripe the roadway along Torrance Boulevard, and modify the signal equipment to provide dual eastbound left-turn lanes. Restrict parking and restripe the roadway to provide a northbound right-turn-only lane.
- o 16. Western Avenue and Carson Street -- Restrict parking and potential flare the east leg of Carson Street to provide right-turn-only lanes in the westbound and eastbound directions.
- o 17. Western Avenue and Sepulveda Boulevard -- Restrict parking and modify the median islands along Western Avenue to provide right-turn-only lanes in the northbound and southbound directions.
- o 18. Western Avenue and Pacific Coast Highway -- Restrict parking and flare Western Avenue to provide right-turn-only lanes in the southbound direction.
- o 19. Project Roadway and 190th Street -- Restrict parking and restripe 190th Street to provide three travel lanes plus left-turn channelization in the westbound and eastbound directions. Construct the internal project roadway to provide a three-lane northbound approach including a left-turn-only lane, a through/left optional lane and a right-turn-only lane. Construct the signal to provide opposed north/south phasing (assuming a driveway along the north curb is a fourth intersection leg). Fund the installation of ATSAC at this intersection.
- o 20. Normandie Avenue and Artesia Boulevard -- Provide dual left-turn lanes in the southbound direction by restriping Normandie Avenue and modifying the signal.

- o 22. Normandie Avenue and I-405 Freeway Northbound On/Off-Ramps -- Widen and/or modify the median island on the westbound approach (off-ramp) to provide two left-turn-only lanes and one right-turn-only lane instead of the existing two-lane approach. Additionally, restripe the northbound approach to provide two through lanes and an exclusive right-turn-only lane to facilitate freeway access.
- o 23. I-405 Freeway Southbound Off-Ramp/Project Driveway and 190th Street -- Flare and restripe 190th Street to provide three travel lanes in the eastbound and westbound directions, left-turn channelization and an eastbound right-turn-only pocket. Construct the project driveway to provide dual left-turn lanes and a right-turn-only lane in the northbound direction. Install a signal with opposed northbound and southbound phasing. Fund ATSAC installation at this location.
- o 24. Normandie Avenue and 190th Street -- Modify the signal and railroad crossing equipment on 190th Street to provide dual left-turn-only lanes plus three travel lanes in the eastbound and westbound directions. Modify the signal equipment to provide a southbound right-turn overlap phase. Restripe Normandie Avenue to provide a third northbound travel lane. Additionally, fund the installation of ATSAC at this location.
- o 25. Normandie Avenue and Project Roadway/Francisco Street -- Construct the project roadway to provide a three-lane eastbound approach including a left-turn-only lane, a through/left optional lane and a right-turn-only lane. Modify the signal to provide opposed phasing the eastbound and westbound directions.

- o 26. Normandie Avenue and Torrance Boulevard -- Restrict parking, flare and restripe Normandie Avenue to provide a third northbound through lane. Restrict parking and restripe Torrance Boulevard to provide a westbound right-turn-only lane.
- o 27. Normandie Avenue and Carson Street -- Fund the installation of ATSAC at this intersection.
- o 30. Vermont Avenue and Artesia Boulevard -- Flare and restripe Vermont Avenue and modify the signal equipment to provide dual left-turn lanes in the northbound direction. Providing a northbound right-turn phase overlapping the existing westbound left-turn phase as part of the signal modifications.
- o 31. Vermont Avenue and 190th Street -- Restripe 190th Street and modify the median island and signal equipment to provide dual left-turn lanes in the eastbound and westbound directions. Fund the installation of ATSAC at this intersection.
- o 32. Vermont Avenue and Torrance Boulevard -- Restrict parking and restripe Vermont Avenue to provide a right-turn-only lane in the northbound and southbound directions.
- o 33. Vermont Avenue and Carson Street -- Restrict parking and restripe Vermont Avenue to convert the existing eastbound right-turn-only lane into a through/right optional lane.
- o 34. I-110 Freeway Southbound Off-Ramp and 190th Street -- Restripe 190th Street to provide three travel lanes in the eastbound and westbound



directions. Modify the signal to provide a southbound right-turn phase extension concurrent with the initiation of the eastbound through phase.

- o 35. I-110 Freeway Northbound On-Ramp and 190th Street -- Modify the median island, restrict parking and restripe 190th Street to provide dual eastbound left-turn lanes.
- o 36. Figueroa Street and 190th Street -- Restrict parking and restripe Figueroa Street to provide a southbound right-turn-only lane.
- o 38. Figueroa Street and I-110 Freeway Northbound On/Off-Ramps -- Restripe Figueroa Street and modify the signal to provide northbound dual left-turn lanes.
- o 39. Hamilton Avenue and Torrance Boulevard -- Restripe Hamilton Avenue to provide a left/right optional lane and a right-turn-only lane.
- o 40. Figueroa Street and Torrance Boulevard -- Remove the sidewalk along the south curb, restrict parking and restripe Torrance Boulevard to provide a left-turn-only lane, a through/left optional lane, and through/right optional lane in the eastbound direction. Modify the signal to provide opposed east-west phasing.
- o 41. I-110 Freeway Southbound On/Off-Ramps and Carson Street -- Restripe Carson Street and modify the signal to provide dual left-turn lanes in the westbound direction.

Table 12 summarizes the CMA values at the significantly impacted intersections with the physical (Categories 3, 4 and 5) mitigating measures listed above. It does not, however, consider the trip reduction benefits of the Category 1 and 2 measures.

**Table 12**  
**Critical Movement Analysis Summary**  
**Future (Year 2006) Traffic Conditions**  
**With Project Mitigation**

<b>No.</b>	<b>Intersection</b>	<b>Peak Period</b>	<b>Without Project</b>		<b>With Project With Mitigation</b>		
			<b>CMA</b>	<b>LOS</b>	<b>CMA</b>	<b>LOS</b>	<b>IMPACT</b>
1.	Hawthorne Blvd. and 190th St.	AM PM	1.048 1.043	F F	1.031 1.034	F F	- 0.017 - 0.009
3.	Crenshaw Blvd. and San Diego Fwy. S/B on/off-ramps	AM PM	0.944 0.865	E D	0.874 0.787	D C	- 0.070 - 0.078
4.	Crenshaw Blvd. and 190th St.	AM PM	1.286 1.305	F F	1.131 1.215	F F	- 0.155 - 0.090
5.	Crenshaw Blvd. and Del Amo Blvd.	AM PM	0.881 0.927	D E	0.873 0.913	D E	- 0.008 - 0.014
7.	Western Ave. and Artesia Blvd.	AM PM	1.052 1.096	F F	1.030 1.089	F F	- 0.022 - 0.007
8.	Western Ave. and 182nd St.	AM PM	0.571 0.733	A C	0.627 0.769	B C	+ 0.056 + 0.036
9.	Western Ave. and San Diego Fwy. N/B on/off-ramps	AM PM	0.671 0.878	B D	0.687 0.827	B D	+ 0.016 - 0.051
10.	San Diego Fwy. S/B on/off-ramps	AM PM	1.134 1.119	F F	1.117 1.072	F F	- 0.017 - 0.047
11.	Western Ave. and 190th St.	AM PM	0.820 1.113	D F	0.843 1.227	D F	+ 0.023* + 0.114*
13.	Western Ave. and Project Dwy.	AM PM	0.361 0.410	A A	0.585 0.547	A A	+ 0.224 + 0.137
14.	Western Ave. and Del Amo Blvd.	AM PM	0.784 0.805	C D	0.737 0.686	C B	- 0.047 - 0.119
15.	Western Ave. and Torrance Blvd.	AM PM	0.836 0.874	D D	0.848 0.848	D D	+ 0.012 - 0.026
16.	Western Ave. and Carson St.	AM PM	0.832 1.045	D F	0.851 1.003	D F	+ 0.019 - 0.042
17.	Western Ave. and Sepulveda Blvd.	AM PM	1.062 1.144	F F	0.978 1.081	E F	- 0.084 - 0.063
18.	Western Ave. and Pacific Coast Hwy.	AM PM	1.042 1.052	F F	1.028 1.056	F F	- 0.014 + 0.004
19.	Project Dwy. and 190th St.	AM PM	0.599 0.839	A D	0.534 0.741	A C	- 0.065 - 0.098

\* Denotes significant impact

**Table 12 (cont.)**  
**Critical Movement Analysis Summary**  
**Future (Year 2006) Traffic Conditions**  
**With Project Mitigation**

<u>No.</u>	<u>Intersection</u>	<u>Peak Period</u>	<u>Without Project</u>		<u>With Project With Mitigation</u>		
			<u>CMA</u>	<u>LOS</u>	<u>CMA</u>	<u>LOS</u>	<u>IMPACT</u>
20.	Artesia Blvd. and Normandie Ave.	AM PM	0.897 1.016	D F	0.851 0.945	D E	- 0.046 - 0.071
22.	Normandie Ave. and San Diego Fwy. N/B on/off-ramps	AM PM	0.653 0.674	B B	0.619 0.686	B B	- 0.034 + 0.012
23.	San Diego Fwy. off-ramp and 190th St.	AM PM	0.698 0.983	B E	0.438 0.910	A E	- 0.260 - 0.073
24.	Normandie Ave. and 190th St.	AM PM	0.862 1.113	D F	0.964 1.032	E F	+ 0.102* - 0.081
25.	Normandie Ave. and Project Dwy./ Francisco St.	AM PM	0.449 0.411	A A	0.538 0.598	A A	+ 0.089 + 0.187
26.	Normandie Ave. and Torrance Blvd.	AM PM	0.767 0.797	C C	0.639 0.813	B D	- 0.128 + 0.016
27.	Normandie Ave. and Carson St.	AM PM	0.697 0.863	B D	0.661 0.836	B D	- 0.036 - 0.027
30.	Vermont Ave. and Artesia Blvd.	AM PM	0.919 0.889	E D	0.900 0.879	D D	- 0.019 - 0.010
31.	Vermont Ave. and 190th St.	AM PM	0.865 1.155	D F	0.778 1.116	C F	- 0.087 - 0.039
32.	Vermont Ave. and Torrance Blvd.	AM PM	0.803 0.884	D D	0.797 0.864	C D	- 0.006 - 0.020
33.	Vermont Ave. and Carson St.	AM PM	0.837 0.917	D E	0.838 0.814	D D	+ 0.001 - 0.103
34.	Harbor Fwy. S/B off-ramp and 190th St.	AM PM	0.647 0.805	B D	0.699 0.674	B B	+ 0.052 - 0.131
35.	Harbor Fwy. N/B on-ramp and 190th St.	AM PM	0.371 0.728	A C	0.373 0.559	A A	+ 0.002 - 0.169
36.	Figuerroa St. and 190th St.	AM PM	0.557 0.782	A C	0.647 0.789	B C	+ 0.090 + 0.016
39.	Hamilton Ave. and Torrance Blvd.	AM PM	0.837 1.078	D F	0.788 0.993	C E	- 0.049 - 0.085
40.	Figuerroa St. and Torrance Blvd.	AM PM	0.851 1.011	D F	0.767 0.889	C D	- 0.084 - 0.122

\* Denotes significant impact

As this table shows, while the Harbor Gateway Center multi-use development will add to the cumulative traffic flow in the study area, it will be able to reduce significant impacts upon traffic conditions at most locations once the proposed traffic mitigating measures are installed. Significant traffic impacts could remain, however, at two intersections and on area freeways. Cumulative programs, such as regional transit system improvements, ridesharing requirements, and regional roadway capacity enhancements will mitigate these remaining impacts to some degree.

**APPENDIX A**

**TRAFFIC GENERATION BY PHASE**

# APPENDIX A

## Traffic Generation By Phase

Phase I								
Land Use Category	Size (Sq. Ft.)	Daily Traffic	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Shopping Center Gross Generation								
Retail*	355,000	13,840	196	115	311	656	656	1,312
Restaurant - Quality	10,000	910	6	3	9	50	24	74
Restaurant - High Turnover	10,000	1,780	75	73	148	72	57	129
Restaurant - Fast Food	10,000	7,100	285	274	559	190	176	366
Theater - 4,000 seats	65,000	1,930	76	44	120	154	86	240
Subtotal	450,000	25,560	638	509	1,147	1,122	999	2,121
Less Shopping Center Internal/Pass-By Trips								
Retail (0%/20%)		(2,770)	(39)	(23)	(62)	(131)	(131)	(262)
Restaurant - Quality (20%/10%)		(270)	(2)	(1)	(3)	(15)	(7)	(22)
Restaurant - High Turnover (20%/20%)		(710)	(30)	(29)	(59)	(29)	(23)	(52)
Restaurant - Fast Food (20%/50%)		(4,970)	(200)	(192)	(392)	(133)	(123)	(256)
Theater (10%/10%)		(390)	(15)	(9)	(24)	(31)	(17)	(48)
Subtotal		(9,110)	(286)	(254)	(540)	(339)	(301)	(640)
Site Generation	450,000	16,450	352	255	607	783	698	1,481
Less Existing Site Generation								
Warehouse**	(600,000)	(2,120)	(151)	(59)	(210)	(96)	(178)	(274)
Net Site Generation Increase	(150,000)	14,330	201	196	397	687	520	1,207

\* Rate for 450,000 sq. ft. Shopping Center used.

\*\* Rate for 2.4 million sq. ft. Warehouse used. Building area removal based on acreage of phase.

**APPENDIX A (cont.)**  
**Traffic Generation By Phase**

<u>Land Use Category</u>	<u>Size (Sq. Ft.)</u>	<u>Daily Traffic</u>	Phase II					
			<u>AM Peak Hour</u>			<u>PM Peak Hour</u>		
			<u>In</u>	<u>Out</u>	<u>Total</u>	<u>In</u>	<u>Out</u>	<u>Total</u>
Office Park	507,000	5,630	779	96	875	106	598	704
Industrial Park	804,100	4,750	524	71	595	78	444	522
Subtotal	1,311,100	10,380	1,303	167	1,470	184	1,042	1,226
Less Existing Site Generation Warehouse**	(1,000,000)	(3,540)	(251)	(98)	(349)	(160)	(297)	(457)
Net Site Generation Increase	<u>311,100</u>	<u>6,840</u>	<u>1,052</u>	<u>69</u>	<u>1,121</u>	<u>24</u>	<u>745</u>	<u>769</u>
Total Phases I & II	161,100	21,170	1,253	265	1,518	711	1,265	1,976

# APPENDIX A (cont.)

## Traffic Generation By Phase

<u>Land Use Category</u>	<u>Size (Sq. Ft.)</u>	<u>Daily Traffic</u>	Phase III					
			<u>AM Peak Hour</u>			<u>PM Peak Hour</u>		
			<u>In</u>	<u>Out</u>	<u>Total</u>	<u>In</u>	<u>Out</u>	<u>Total</u>
Industrial Park***	1,206,600	5,970	581	79	660	53	297	350
Less Existing Site Generation Warehouse**	(819,000)	(2,900)	(206)	(80)	(286)	(131)	(243)	(374)
Net Site Generation Increase	<u>387,600</u>	<u>3,070</u>	<u>375</u>	<u>(1)</u>	<u>374</u>	<u>(78)</u>	<u>54</u>	<u>(24)</u>
TOTAL PHASES I, II & III	548,700	24,240	1,628	264	1,892	633	1,319	1,952

\* Rate for 450,000 sq. ft. Shopping Center used.

\*\* Rate for 2.4 million sq. ft. Warehouse used. Building area removal based on acreage of phase.

\*\*\* Remaining trips for 2,010,700 sq. ft. Industrial Park used.



**APPENDIX B**

**TDM ORDINANCE (NO.168,700)**

**APPENDIX C**  
**CRITICAL MOVEMENT ANALYSIS CALCULATIONS**  
**(under separate cover)**